BRAHMAPUTRA CRACKER AND POLYMER LIMITED

A Govt. of India Enterprise

BRAHMAPUTRA PETROCHEMICAL COMPLEX OF BRAHMAPUTRA CRACKER AND POLYMER LIMITED AT LEPETKATA, (ASSAM)
(DOMESTIC COMPETITIVE BIDDING)

TENDER NO. BCPL/DIB/C&P/SER/20140139/AJD/6907-160-16-43-PK-T-3001

(BIDDING DOCUMENT NO. 6907-160-16-43-PK-T-3001)

BIDDING DOCUMENT

FOR

COMPOSITE WORKS

FOR RAILWAY SIDING TERMINAL AT LEPETKATA

VOL – I: COMMERCIAL

Prepared & Issued by:

BRAHMAPUTRA CRACKER AND POLYMER LIMITED

A Govt. of India Enterprise

C&P Department, Administrative Building, Lepetkata, Dibrugarh-786006, Assam

Corporate Identification Number(CIN): U11101AS2007GOI008290

Wherever written as "GAIL" should be read as "BCPL"

(Bidders are requested to visit BCPL website: www.bcplonline.co.in for full details of the Bidding Document)

Cost of Bidding Document (non-refundable): **Rs.3,000/- (Rupees Three Thousand Only)** **Sl. No. …….**

MASTER INDEX

NAME OF WORK: COMPOSITE WORKS FOR RAILWAY SIDING TERMINAL OF M/s BRAHMAPUTRA CRACKER AND POLYMER LIMITED AT LEPETKATA (ASSAM)

BIDDING DOCUMENT NO. : 6907-160-16-43-PK-T-3001

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2.	Scope of work and supply - **Piping**	6907-160-16-43-SOW-001	1	10
3.	Scope of work and supply – **General Civil**	6907-160-52-47-SP-45	B	7
4.	Scope of work and supply - **Structural**	6907-160-52-48-SP-45	0	6
5.	**Static Equipment** input for Mechanical works	6907-160-16-46-SP-0001	B	3
6.	Job Specification for Mechanical Erection and Pre commissioning of **Rotating Equipment**	6907-160-16-45-SP-0045	A	4
7.	Scope of work and supply - **Packaged Equipment**	6907-160-16-44-SOW-45	A	4
8.	Scope of work & supply **(Electrical Works)**	6907-160-16-50-SP-45	A	3

SECTION-II (LIST OF JOB STANDARDS/DATA SHEETS & DRAWINGS)

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a)	**Piping**			
1	P & ID – Standard symbols & Nomenclature	6907-04-41-000-1191	A	1
2	P & ID – Typical details of MOV, ROV, DV, SC etc	6907-04-41-000-1193	B	1
3	P & ID – Naphtha unloading system	6907-04-41-160-1151	2	1
4	Piping Material Specification	6907-6-44-0005	2	27
5	Specification for non-destructive examination requirements of piping	6907-6-44-0016	1	20
6	Welding specification charts for piping classes.	6907-6-77-0005	1	27
7	Equipment Layout of Railway siding facilities for Naphtha unloading system	6907-160-16-43-0001	2	1
8	Area Division	6907-160-16-43-0002	2	1
9	Piping plan for Area-01	6907-160-16-43-0101	3	1
10	Piping plan for Area-03	6907-160-16-43-0301	2	1
11	Piping plan for Area-04	6907-160-16-43-0401	3	1
12	Piping plan for Area-02 +Part drawing	6907-160-16-43-0201	3	1+3
13	Job specification for shop & field painting	6907-0642-PT-L07	0	47
b)	**General Civil**			
14	Overall Plot Plan Railway siding Facilities for Naphtha Unloading	6907-160-16-47-0003	**2**	1
15	Layout of Fire Water System	6907-160-16-47-0402	0	1
16	Layout of OWS & CRWS System	6907-160-16-47-0403	**1**	1

Sr. No.	Description	Drawing / Document No.	Rev. No.	No. of sheets
17	Fire Water Pump House GA & Piping layout of FW Pump house and reservoir	6907-160-16-47-1506	B	1
18	Piping material specification	6907-6-44-0005 (This Doc. is available above in section-II, Sr. No.1)	2	27
19	Job specification for corrosion protection tape coating for underground pipelines.	6907-0642-CTTAPE-C10	0	14
20	Job specification for shop & field painting	6907-0642-PT-L07 (This Doc. is available above in section-II, Sr. No.4)	0	47
c)	**Structural**			
21	Job specification for shop & field painting	6907-0642-PT-L07 (This Doc. is available above in section-II, Sr. No.4)	0	47
d)	**Static Equipment**			
22	MDS for 160-UV-01(Naphtha Unloading CBD)	6907-141-16-46-DS-3066	3	3
23	Equipment details for erection (Vessels)	6907-160-16-46-EE-001	A	2
24	Equipment details for painting (Vessels)	6907-160-16-46-EP-001	A	2
25	Nozzle orientation for 160-UV-01(Naphtha Unloading CBD)	6907-160-52-43-4001	3	1
26	Job specification for shop & field painting	6907-0642-PT-L07 (This Doc. is available above in section-II, Sr. No.4)	0	47
e)	**Rotating Equipment**			
27	Job Specification for Dewatering pumps	6907-160-16-45-SP-0045A	A	5
28	Pump data sheet(160-P-01A/B)	6907-160-52-47-DSA1	0	1
29	Pump data sheet(160-P-02A/B)	6907-160-52-47-DSA2	0	1
30	EIL approved vendor list-Dewatering pumps			2
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SECTION-III (EIL STANDARDS & SPECIFICATIONS)

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a)	**Piping**			
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2	Standard specification for inspection, flushing and testing of piping systems.	6-44-0013	4	9
3	Technical Notes for Pipes	6-44-0051	5	10
4	Technical Notes for Flanges, Spectacle Blinds and Drip Rings	6-44-0053	5	7
5	Standard specification for application of torque and hydraulic bolt tension for	6-76-0002	1	28

Sr. No.	Description	Drawing / Document No.	Rev. No.	No. of sheets
	flange joints			
6	Welding specification for fabrication of piping	6-77-0001	4	40
7	Inspection & test plan for welded pipes	6-81-0002	4	6
8	Inspection & test plan for valves	6-81-0004	5	7
9	Inspection & test plan for forged, seamless and welded fittings	6-81-0005	5	6
10	Inspection & test plan for flanges, spectacle blinds & drip rings	6-81-0006	4	6
11	Inspection & test plan for bolting material	6-81-0007	3	5
12	Inspection & test plan for gaskets	6-81-0008	3	5
13	Standard specification for positive material identification (PMI) at construction sites	6-82-0002	2	10
~~14~~	~~Inspection & Test Plan for Underground Piping (Carbon Steel)~~ (**DELETED**)	~~6-82-2740~~	~~0~~	~~10~~
~~15~~	~~Inspection & Test Plan for Underground Piping (Carbon Steel) (Item Rate contracts)~~ (**DELETED**)	~~Part C of 6-82-1700~~	~~1~~	~~65~~
16	Symbols of piping elements on drawings	7-44-0003	3	4
17	Details of Mitered elbow	7-44-0033	4	2
18	Vent & Drains (On Lines 1.5” & Below)	7-44-0350	3	1
19	Vent & Drains (On Lines 2.0” & Above)	7-44-0351	3	1
20	Orientation of orifice taps	7-44-0352	3	1
21	Wells installation 1.5” dia taps	7-44-0353	3	2
22	Pressure tappings(PA,PG,PC, PT, PIC etc)	7-44-0354	3	1
23	Utility Hose Station	7-44-0401	3	1
24	Welding of pipe with different thickness	7-44-0476	4	1
25	Butt welding end preparation	7-44-0477	3	1
26	Fillet weld details	7-44-0478	3	1
27	Welding details for branch connections	7-44-0479	3	1
28	Butt weld details	7-44-0480	4	1
29	Butt weld details	7-44-0481	4	1
30	Welding detail for branch connections (Stub in)	7-44-0482	4	1
31	Branch connection (breaking into)	7-44-0483	3	1
32	Branch connection (Not breaking into)	7-44-0484	3	1
33	Method of cutting and dimensions of field manufactured concentric reducers	7-44-0485	4	1
34	Tolerances for fabrication	7-44-0486	4	1
35	Method of cutting & dimensions of field manufactured eccentric reducers	7-44-0487	4	1

Sr. No.	Description	Drawing / Document No.	Rev. No.	No. of sheets
36	Clearance requirements for orifice flange instrument piping	7-44-0504	2	3
b)	**General Civil**			
37	Inspection Test Plans Mechanical works	6-82-1100	1	107
38	Inspection Test Plans Civil, Structural & Architectural works	6-82-1700	1	65
39	Standard specification for earthwork for underground piping.	6-65-0006	2	7
40	Standard specification for road & flexible pavements. (upto WBM layer).	6-65-0018	6	11
41	Standard specification for concrete pavement.	6-65-0019	2	10
42	Standard specification for underground and above ground G.I. pipeline system (water services)	6-65-0027	3	5
43	Standard specification for fabrication and laying of underground piping.	6-65-0030	3	11
44	Standard specification for misc. civil & structural works for U/G piping & other civil works	6-65-0035	2	7
45	Standard specification for underground C.I. piping system.	6-65-0036	2	8
46	Standard specification for underground sewer system - pre cast R.C.C. pipes.	6-65-0042	2	7
47	Technical specification - civil and structural works - general scope.	6-68-0001 (This Doc. is available below in section-III, Sr. No.79)	3	4
48	Standard specification civil & structural works materials.	6-68-0002 (This Doc. is available below in section-III, Sr. No.80)	3	16
49	Standard specification civil & structural works earthwork.	6-68-0003 (This Doc. is available below in section-III, Sr. No.81)	4	14
50	Technical specification - civil & structural works - plain & reinforced cement concrete	6-68-0004 (This Doc. is available below in section-III, Sr. No.82)	4	30
51	Standard specification- civil & structural works - miscellaneous steel works	6-68-0008(This Doc. is available below in section-III, Sr. No.84)	5	12
52	Abbreviations, legends and equipment symbols.	7-65-0001	3	4
53	Catch basin (offsite) for depth $\leq$ 2.5 m.	7-65-0204	5	1
54	Grating detail for catch basin (for both steel & galvanized material).	7-65-0206	3	1

Sr. No.	Description	Drawing / Document No.	Rev. No.	No. of sheets
55	Details of rungs for manholes, valve pits, tanks, etc.	7-65-0211	3	1
56	Standard miscellaneous details for manholes.	7-65-0212	2	1
57	Conc. Bedding and encasement for pipes.	7-65-0213	3	1
58	Vents for manholes.	7-65-0219	3	1
59	Typical detail of bend pipe for manholes.	7-65-0230	2	1
60	Manhole type-6 for depth [3m, (ϕ [800).	7-65-0256	3	1
61	Manhole type-10 for depth < 3m, (ϕ < 500).	7-65-0260	3	1
62	Manhole type-11 for depth < 5m, (ϕ< 800).	7-65-0261	3	1
63	Manhole type-13 for depth [5m, (ϕ [800).	7-65-0263	3	1
64	Manhole type-14 for depth [3m, (ϕ [500).	7-65-0264	3	1
65	Unit drainage details (for catch basin type-3).	7-65-0265	3	1
66	Unit drainage details (equipment drain funnels).	7-65-0266	2	1
67	Unit drainage details (CBD & ABD header laying detail).	7-65-0269	3	1
68	Unit drainage details (clean out for C.B.D header).	7-65-0270	3	1
69	Unit drainage details (typ. branch connection for C.B.D./O.W.S).	7-65-0271	2	1
70	Unit drainage details (manhole combined with double valve pit).	7-65-0273	3	1
71	R.C.C. pavement details.	7-65-0404	2	1
72	Details of anchor sleepers.	7-65-0415	3	1
73	Installation details of fire water hydrant.	7-65-0420	2	1
74	Installation details of water monitor or water cum foam monitor, long range foam/water monitor.	7-65-0421	1	1
75	Assembly & erection arrangement for precast sleeper	7-65-0422	2	2
76	Concrete sliding sleeper precast type-1B	7-65-0428	1	1
77	Concrete sliding sleeper precast type-2B	7-65-0429	1	1
78	Concrete sliding sleeper precast type-1A	7-65-0433	1	1
c)	**Structural**			
79	Technical specification Civil and Structural work- General scope	6-68-0001	3	4
80	Standard specification civil & structural works materials.	6-68-0002	3	16
81	Standard specification civil & structural works earthwork.	6-68-0003	4	14
82	Technical specification - civil & structural works - plain & reinforced cement concrete	6-68-0004	4	30
83	Structural Steel Works	6-68-0006	5	24
84	Standard specification- civil & structural works - miscellaneous steel works	6-68-0008	5	12

Sr. No.	Description	Drawing / Document No.	Rev. No.	No. of sheets
85	Demolition and Dismantling	6-68-0012	3	6
86	Miscellaneous Items	6-68-0013	2	8
87	Pedestal for Stair/Ladder	7-67-0008	5	1
88	M.S. Rungs for Concrete Structure	7-68-0052	5	1
89	Metal Insert Plates	7-68-0056	5	7
90	Typical Cranking Detail of Rebar at Beam & Column Junctions.	7-68-0062	4	1
91	Standard Rebar Shapes & Cut Length Computation	7-68-0101	4	7
92	Adjustment of Stirrups at Beam Crossing	7-68-0102	3	1
93	Standard Lap Length for Rebars	7-68-0106	5	1
94	Typical Grating Support	7-68-0202	5	1
95	Beam to Beam and Beam to Column connection details	7-68-0211	4	1
96	Welding Symbols	7-68-0251	4	6
97	MS Anchor Bolt Assemblies	7-68-0417	6	7
98	Handrail	7-68-0501	6	8
99	Steel stairs	7-68-0506	5	6
100	Pipe Sleepers Cross-Over	7-68-0563	3	4
101	Cable-Trench	7-68-0626	3	17
102	Detail of Moment Connection for MC [ ] Column to MC [ ] Beam	7-68-0654	2	2
103	Typical Detail of Moment Connection with MB Column to MB Beam.	7-68-0660	1	4
104	Shear Connections welded type-Beam to Beam	7-68-0689	1	4
105	Electro-forged grating type-I & II	7-68-0697	0	6
d)	**Static Equipment**			
106	Std. Specification for Boiler Quality Carbon Steel Plates	6-12-0011	6	6
107	Std. Specification for Weld able Structural Quality Steel Plates	6-12-0014	4	5
108	Standard specification for erection of equipment and machinery	6-76-0001	3	22
109	Specification for Documentation requirements from Contractors	6-78-0002	0	8+4
110	Specification for Quality management system requirements from bidder	6-78-0001	0	7+2
111	Standard bolt hole orientation	7-12-0015	4	1
112	Internal flanges	7-12-0018	4	1
e)	**Rotating Equipment**			
113	Standard Specification for erection of equipment and machinery	6-76-0001 (This Doc. is available above in section-III, Sr. No.108)	3	22

Sr. No.	Description	Drawing / Document No.	Rev. No.	No. of sheets
114	Specification for Quality Management system requirements from bidders	6-78-0001 (This Doc. is available above in section-III, Sr. No.111)	0	7+2
115	Specification for Documentation requirement from Contractors	6-78-0002 (This Doc. is available above in section-III, Sr. No.112)	0	8+4
116	Specification for Documentation requirement from suppliers	6-78-0003	0	8+4
f)	**Packaged Equipment**			
117	Standard specification for Erection of Equipment and Machinery	6-76-0001 (This Doc. is available above in section-III, Sr. No.108)	3	22
118	Instruction to vendor for site performance guarantee requirements	7-76-0103	1	5
g)	**Electrical**			
119	Specification for Electrical Equipment Installation	6-51-0081	4	15
120	Specification for Field Inspection, Testing and Commissioning of Electrical Installations	6-51-0087	3	8
121	Typical Installation of Lighting/Power Panel wall Surface(Mounted)	7-51-0026	4	1
122	Installation Details for Conduit or Cable support on Wall/Slab/Beam	7-51-0305	4	1
123	Installation Details for Socket/Receptacle Mounted on wall/Column(Cable below ground)	7-51-0315	4	1

SECTION- IV (LIST OF DOCUMENTS FOR PROCUREMENT OF PIPING ITEMS LISTED IN SOR ANNEXURE-1

Sr. No.	Description	Drawing / Document No.	Rev. No.	No. of sheets
1	Technical Notes for Flanges, Spectacle Blinds and Drip Rings	6-44-0053	5	7
2	Technical notes for butt welded, socket welded and screwed fittings	6-44-0054	5	9
3	Technical notes for hoses and hose couplings	6-44-0064	1	5
4	Specification for quality management system requirements from bidders	6-78-0001	0	7+2
5	Specification for documentation requirements from suppliers	6-78-0003	0	8
6	Inspection & test plan for forged, seamless and welded fittings	6-81-0005	5	6
7	Inspection & test plan for flanges, spectacle blinds & drip rings	6-81-0006	4	6

Sr. No.	Description	Drawing / Document No.	Rev. No.	No. of sheets
7	Technical notes for hoses and hose couplings	6-44-0064	1	5
8	Inspection & test plan for hose pipe and coupling	6-81-0135	2	5
9	Data sheet for hoses	6907-160-16-43-DS-4001	0	1
10	Technical notes for butt welded, socket welded and screwed fittings	6-44-0054	5	9

ISSUE LETTER OF BIDDING DOCUMENT

NAME OF WORK: **COMPOSITE WORKS FOR RAILWAY SIDING TERMINAL OF M/s BRAHMAPUTRA CRACKER AND POLYMER LIMITED AT LEPETKATA (ASSAM)**

BIDDING DOCUMENT NO.: 6907-160-16-43-PK-T-3001

1. A set consisting of Bidding Document comprising of Two (2) CDs containing the Commercial Part (Vol. I) and Technical Part (Vol. II) of the Bidding Document is issued to :

   NAME & ADDRESS OF BIDDER: _____

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2. The cost of the Bidding Document (Non-Refundable) is Rs. 3,000/- (Rupees Three Thousand only) payable by the Bidders in the form of Crossed Demand Draft (DD No. _____ dated _____) in favour of M/S BRAHMAPUTRA CRACKER AND POLYMER LTD. payable at ***Dibrugarh (Assam).***

3. The Bidding Document is not transferable in any other name.

4. Bidders desirous to submit their bid on downloaded document have to pay requisite document fee as specified in the bidding document while submitting their bid. Bids submitted on downloaded documents shall not be considered for opening without requisite bidding document fee.

5. CUT OUT SLIPS ARE ENCLOSED WITH THE ISSUE LETTER FOR PASTING IT ON THE OUTER ENVELOPE AND INNER ENVELOPES. IN CASE OF EXTENSION OF DEADLINE OF BID SUBMISSION, THE DATE SPECIFIED ON THE CUTOUT SLIP SHALL BE CHANGED BY THE BIDDER ACCORDINGLY.

A J DUTTA
Dy. Manager(Contracts & Procurement)
Administrative Building ,
Brahmaputra Cracker and Polymer Ltd
PO. Lepetkata, Dist. Dibrugarh (Assam)
E-Mail: ajdutta@bcplindia.co.in
Ph no: 0373-2914636

CUT – OUT SLIP

[TECHNO COMMERCIAL BID]

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NAME OF WORK: **COMPOSITE WORKS FOR RAILWAY SIDING TERMINAL OF M/s BRAHMAPUTRA CRACKER AND POLYMER LIMITED AT LEPETKATA (ASSAM)**

BIDDING DOCUMENT NO.: 6907-160-16-43-PK-T-3001

UNPRICED BID DUE ON Upto 14-30 Hrs on 10/10/2014

To:

Attn: A J DUTTA
Dy. Manager(Contracts & Procurement)
Administrative Building ,
Brahmaputra Cracker and Polymer Ltd
PO. Lepetkata, Dist. Dibrugarh (Assam)
E-Mail: ajdutta@bcplindia.co.in
Ph no: 0373-2914636

From:

M/s

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[TO BE PASTED ON THE OUTER ENVELOPE CONTAINING PART-I (UNPRICED BID), PART-II (PRICED BID) & PART-III (BID SECURITY / EMD)]

CUT – OUT SLIP

[PART-I UNPRICED BID]

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PO. Lepetkata, Dist. Dibrugarh (Assam)
E-Mail: ajdutta@bcplindia.co.in
Ph no: 0373-2914636

From:

M/s

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[TO BE PASTED ON THE ENVELOPE CONTAINING PART-I UNPRICED BID]

CUT – OUT SLIP

[PART-II PRICED BID]

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Administrative Building ,
Brahmaputra Cracker and Polymer Ltd
PO. Lepetkata, Dist. Dibrugarh (Assam)
E-Mail: ajdutta@bcplindia.co.in
Ph no: 0373-2914636

From:

M/s

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[TO BE PASTED ON THE ENVELOPE CONTAINING PART-II PRICED BID]

CUT – OUT SLIP

[PART-III EARNEST MONEY DEPOSIT (EMD)]

DO NOT OPEN – THIS IS A QUOTATION

NAME OF WORK: **COMPOSITE WORKS FOR RAILWAY SIDING TERMINAL OF M/s BRAHMAPUTRA CRACKER AND POLYMER LIMITED AT LEPETKATA (ASSAM)**

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Brahmaputra Cracker and Polymer Ltd
PO. Lepetkata, Dist. Dibrugarh (Assam)
E-Mail: ajdutta@bcplindia.co.in
Ph no: 0373-2914636

From:

M/s

_____

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[TO BE PASTED ON THE ENVELOPE CONTAINING PART –III (BID SECURITY / EMD]

NOTICE INVITING TENDER
DOMESTIC COMPETITIVE BIDDING
TENDER NO. BCPL/DIB/C&P/SER/20140139/AJD/6907-160-16-43-PK-T-3001
(Please read Tender No. /Bidding Document No. as above wherein it is written as 6907-160-16-43-PK-T-3001)
(BIDDING DOCUMENT NO. 6907-160-16-43-PK-T-3001)
FOR
COMPOSITE WORKS FOR RAILWAY SIDING TERMINAL OF BRAHMAPUTRA CRACKER AND POLYMER LIMITED AT LEPETKATA (ASSAM)

1.0 M/s Brahmaputra Cracker & Polymer Limited (BCPL) is putting up a grass root petrochemical complex at Lepetkata, Dibrugarh, ASSAM, involving Ethylene Cracker, Down Streams, Utilities and Offsite. The Railway Siding Terminal for Naphtha Unloading facilities shall be set up between Dhamalgaon and Khowang Railway Stations at Lepetkata, Dist.- Dibrugarh (Assam). M/s Brahmaputra Cracker & Polymer Ltd. (BCPL) is a Central Public Sector Undertaking & Joint Venture Company of M/s GAIL (India) Ltd., M/s Oil India Ltd., M/s Numaligarh Refinery Ltd.
and Government of Assam.

2.0 Engineers India Limited (EIL) has been retained as Project Management Consultant (PMC) for the Project.

M/s Brahmaputra Cracker & Polymer Ltd. (BCPL) invites sealed Bids for **"Composite Works for Railway Siding Terminal at Lepetkata"** as detailed in the Bidding Document.

3.0 **BRIEF SCOPE OF WORK**

The scope of work under this Tender involves Composite Work related to Piping, General Civil, Structural, Static Equipment, Rotating Equipment, Packaged Equipment, etc. at Naphtha Unloading Site (Railway Siding Terminal) including necessary coordination with Railway Authority or its nominated agency. In brief, discipline-wise scope is as below:

Mechanical: Shop & Field fabrication, Erection of Piping Items, Transportation of required piping material to job site from Owner's Storage Point, Laying of Naphtha Header in trench, obtaining the approval from Statutory Authority, Flushing & Testing of all Piping System, Surface Preparation including supply & application of Primer/Finish Paint, Mechanical Erection of Rotating Equipments, Supply & Installation of cassette type Air conditioning System, providing consumable/non-consumables including tools, tackles, plant machinery, labour, etc. to complete Mechanical Works and also supply of few piping items.

General Civil: The scope of work shall include fabrication, installation, construction, erection, testing, trial run, commissioning, etc. for Fire Fighting System, Waste Water Disposal System, Micro-Grading works & Associated Civil Works including

transportation of Free-Issue Materials to job site, providing other consumables/non-consumables including tools, tackles, plant machinery, labour, etc. to complete entire General Civil Works.

Structural: RCC works in the Sub-structure for Pipe Supports, Platforms, Structural Steel works for Platforms & Ladders around Equipments, Equipment Foundations, etc. including associated earth work, shuttering and disposal of surplus earth/debris, RCC/PCC works in Super-structure for Pipe Supports, Equipment Foundations, providing & fixing of Foundation Bolts and Base Plate including Grouting, providing and fixing of electro-forged hot dipped galvanized welded MS Gratings, supply and application of field primer & finish paint to all structures, etc.

The detailed scope of work, discipline-wise, is specified elsewhere in the Bidding Document.

4.0 TIME SCHEDULE FOR COMPLETION: 08 (Eight) Months

To be reckoned from the date of issue of Fax of Acceptance.

5.0 SALIENT FEATURES OF BIDDING DOCUMENT

a)	Bidding Document No.	:	6907-160-16-43-PK-T-3001
b)	Sale Period of Bidding Document	:	From **23/09/2014** to **09/10/2014** (On all Working Days from 9-00 Hrs to 16-00 Hrs. IST)
c)	Bidding Document Fee : (Non Refundable)		Rs. **3000/-** (Rupees Three thousand Only) in favour of "Brahmaputra Cracker & Polymer Ltd.", payable at Dibrugarh (Assam)
d)	Bid Security / Earnest Money Deposit (EMD) (Interest free)	:	Rs.**15** Lakh. (Rupees Fifteen Lakh only.) Bidder shall have to submit the Bid Security / EMD of appropriate value as mentioned above. The EMD shall be submitted in favour of "Brahmaputra Cracker & Polymer Ltd.", payable at Dibrugarh (Assam), in the form of Demand Draft/ Banker's Cheque/ Bank Guarantee from any Indian Scheduled Bank or a branch of International Bank having branch situated in India and registered with Reserve Bank of India as a scheduled foreign bank.

e) Last date of Receipt of Bidder's Queries for Pre-Bid Conference : At 15-00 Hrs. on 29/09/2014

f) Pre-Bid Conference : At 15-00 Hrs on 29/09/2014 at BCPL , am
Bidder submitting Bidding Document fee shall only be permitted to attend pre-bid conference.

g) Last Date and time for submission of Bids :Upto . At 14-30 Hrs on 10/10/2014

h) Opening of Techno-Commercial (Unpriced) Bids : At 15-00 Hrs on 10/10/2014
(In presence of authorized representative of attending bidders).

i) Opening of Priced Bids : On the date & time to be intimated later.

j) Place of submission of bids : C&P DEPARTMENT,
ADMINISTRATIVE BUILDING
BRAHMAPUTRA CRACKER AND POLYMER LIMITED
LEPETKATA
DIBRUGARH-786006, ASSAM
ATTN: DGM (C&P), BCPL Site, Lepetkata

If any of the cutoff date identified above happens to be BCPL holiday, the next working day shall be implied.

5.1 Bidding document can be purchased by interested Bidder on any working day (Monday to Saturday) during sale period from the following location, on written request and upon payment of non-refundable Bidding Document Fee payable through crossed demand draft in favour of **Brahmaputra Cracker & Polymer Limited payable at Dibrugarh (Assam)**:

(a) BRAHMAPUTRA CRACKER AND POLYMER LIMITED.,
LEPETKATA, DIBRUGARH-786006,
ASSAM

Request for sending Bidding Document by Post/ Courier or any other mode shall not be entertained.

5.2 The complete Bidding document is also available on the website of BCPL **www.bcplonline.co.in** , **www.gailtenders.in** and **www.eprocure.gov.in** and Bidders desirous to submit their bid on the basis of downloaded document shall pay cost of Bidding Document of requisite value in the form as mentioned above**,** along with the Techno-Commercial Bid, failing which their Bid shall not be considered for opening /evaluation. However, Bidder who have already submitted the cost of bidding document during pre-bid conference shall not have to submit the cost of bidding document along with their bid and they should mention in their bid submission letter about their submission of cost of bidding document fee during pre-bid conference (with proof of submission, if any). Bidder shall write their name and tender number on the backside of the cross demand draft.

However, Micro or Small Enterprise under the Micro, Small and Medium Enterprises Development Act, 2006 registered with NSIC or from the authorities as mentioned below for similar works with valid certificate and Indian Central Public Sector Undertakings/ Enterprises are exempted from furnishing Bidding document fee.

5.3 Bidder shall purchase or download the Bidding document in his own name and submit the bid directly. The Bidding Document is non transferable. Bid submitted by Bidder who have not purchased the Bidding Document either directly or through their authorized agent or have not downloaded Bidding Document shall not be considered.

5.4 In case, bidder is a M**icro or Small Enterprise under the Micro, Small and Medium Enterprises Development Act, 2006**, bidder shall have to submit the following documents :

a) Documentary evidence that the bidder is a Micro or Small Enterprises registered with District Industries Centers or Khadi and Village Industries Commission or Khadi and Village Industries Board or Coir Board or National Small Industries Corporation or Directorate of Handicrafts and Handloom or any other body specified by Ministry of Micro, Small and Medium Enterprises.

b) The above documents submitted by the bidder shall be duly certified by the Statutory Auditor of the bidder or a practicing Chartered Accountant (not being an employee or a Director or not having any interest in the bidder's company/ firm) where audited accounts are not mandatory as per law.

c) In case, at the time of opening of bid, it is found that bidder has furnished the document as mentioned above but it is not certified as mentioned against sl no 5.4 (b) above, Bidder has to furnish the certified document within one week of bid opening date for further consideration of their offer, else their offer shall be rejected.

6.0 BIDDER'S QUALIFICATION CRITERIA (BQC)

Agencies intending to participate shall fulfill the following Qualification Criteria:

6.1 EXPERIENCE CRITERIA

6.1.1 The Bidder should have executed and completed at least One or Two contracts of Mechanical Works involving Piping including fabrication, erection & testing and Equipment erection in any Industrial Plant of minimum value(s) as indicated under, during the last seven (7) years reckoned from the final due date for submission of bids:

One Contract of minimum value of Rs 304 Lakh (Rupees Three Hundred Four Lakh Only).

OR

Two Contracts each of minimum value of Rs.228 Lakh (Rupees Two Hundred Twenty Eight Lakh Only).

Only successfully completed similar work of value mentioned above shall be considered for qualification of the Bidder. Part completion shall not be considered.

6.1.2 In case Bidder has executed Composite Work(s) in any Industrial Plant under a Single Work Order / Contract which includes qualifying work(s) as stated above in Clause No. 6.1.1, then the value of such qualifying work(s) out of the Total Value of Composite Work(s) shall be considered for the purpose of evaluation and Bidder's qualification.

For composite works, in the event the value of the qualifying work(s) cannot be ascertained from the work order/ completion certificate submitted by bidder, Copy of Schedule of Rates (SOR), relevant pages of Contracts, Copy of relevant pages of final bill certified by OWNER for establishing requirement of BQC or written letter from their Owner specifying the nature of work with quantities and values can be submitted for qualification

6.1.3 Composite Works under the scope of this Tender is a combination of following works:

a) Mechanical works involving Piping (Above-ground & Under-ground) and Equipment erection including Fire Water System
b) Residual Civil & Structural Works

In case Bidder does not possess experience of execution of Civil & Structural Works, the successful Bidder shall engage suitable Agency having experience of execution of Civil & Structural Works after obtaining prior approval from the Engineer-in-Charge, within 15 days of award of contract. In such case, the Bidder shall furnish the details of past experience and other details of their proposed Sub Contractor/Agency pertaining to execution of Civil & Structural Works as per the format provided elsewhere in the Bidding Document.

Bidder shall submit an undertaking w.r.t. “Engagement of an Agency for Civil & Structural Works” after obtaining prior approval from Engineer-in-Charge, along with their Bid.

6.1.4 Experience acquired by a bidder as a sub-contractor shall also be considered for qualifying the experience criteria of BQC/BEC. In such cases, bidder shall be required to furnish the following documents in support of meeting the BQC/BEC:

a) Copy of work order along with SOR issued by main contractor.

b) Copies of Completion Certificates from the end User/ Owner and also from the main contractor. The Completion Certificates shall have details like work order no./ date, brief scope of work, ordered & executed value of the job, completion date etc.

- All documents in support of Experience **Criteria** of Bid Qualification Criteria (BQC/ BEC) to be furnished by the bidders shall necessarily be duly certified/attested by **Chartered Engineer** and **notary public** with legible stamp.

6.2 FINANCIAL CRITERIA

6.2.1 Bidder's minimum Annual Turnover shall be Rs. **380 Lakh (Rupees Three Hundred Eighty Lakh Only)** as per the Audited Annual Financial results, in at least one of the preceding Three (3) financial years. (2011-12, 2012-13 & 2013-14)

6.2.2 The Net Worth of the Bidder during the last Financial Year shall be positive.

6.2.3 The bidder should have the minimum Working Capital of Rs. **76.00 Lakh (Rupees Seventy Six Lakh Only)** during the last financial year. If the bidder's working capital is inadequate, the bidder shall supplement the deficit with a letter issued by his Banker having net worth not less than Rs.100 Crore or US $ 22 million, confirming the availability of line of credit to meet the specified working capital requirement.

7.0 BCPL reserves the right to assess Bidder's capability to execute the work using in house information and by taking into account various aspects such as performance on the completed works/existing works being executed by them at BCPL during evaluation of bids and REJECT THEM IF FOUND INCAPABLE. Bid submitted by bidder who is on holiday list/ negative list of construction contractors of GAIL/ BCPL shall not be considered for opening and further evaluation.

8.0 A job executed by a bidder for its own plant/ projects cannot be considered as experience for the purpose of meeting requirement of Experience Criteria as mentioned above. However, jobs executed for Subsidiary/Fellow subsidiary/ Holding company will be considered as experience for the purpose of meeting Experience Criteria subject to submission of tax paid invoice(s) duly certified by Statutory Auditor of the bidder towards payments of statutory tax in support of the job executed for Subsidiary/Fellow subsidiary/Holding company. Such bidders shall submit these documents in addition to the documents specified at clause no.6.0 below to meet Experience Criteria.

9.0 Bidder shall furnish documentary evidence i.e. copies of work orders mentioning value of work, scope of work, relevant pages of contract, completion certificate from the Owner of work executed, annual reports containing audited balance sheets and

profit & loss accounts statement in the first instance itself, in support of their fulfilling the qualification criteria. BCPL reserve the right to complete the evaluation based on the details furnished without seeking any additional information.

- **NOTE:** Bidder shall submit details of Financial Capability of bidder in the prescribed format (Annexure- Z) duly signed & stamped by **Chartered accountant**. Further, copy of full audited annual financial statements submitted in bid shall be duly certified /attested by **notary public** with legible stamp.

10.0 *All the original certified documents submitted by the bidder towards meeting the BQC/BEC shall be furnished in a separate booklet titled "Documentation against BQC/ BEC" with proper index.*

Submission of authenticated documents is the prime responsibility of the bidder. Wherever BCPL is concerned /apprehensive regarding authenticity/ correctness of any documents, BCPL reserves the right to get the documents cross-verified from the document issuing authority.

11.0 Bids must be accompanied with the Bid Security/EMD as mentioned above in the form of Demand draft or non-revocable Bank Guarantee in favour of **Brahmaputra Cracker & Polymer Limited payable at Dibrugarh (Assam)**. The bank guarantee should be from any Indian Scheduled Bank or a branch of an International Bank situated in India and registered with Reserve Bank of India as scheduled foreign bank. However, other than the Nationalized Indian Banks, the banks whose BGs are furnished, must be commercial banks having net worth in excess of Rs. 100 crores and a declaration to this effect should be made by such commercial bank either in the bank guarantee itself or separately on a letter head.

12.0 Bids not accompanied with requisite Bid Security or Bid Security not in the requisite form shall be considered as non -responsive and such Bids shall be rejected. However, Micro or Small Enterprise under the Micro, Small and Medium Enterprises Development Act, 2006 registered with NSIC or other authorities as mentioned above for similar works with valid certificate and Indian Central Public Sector Undertakings/ Enterprises are exempted from furnishing Earnest Money Deposit/Bid Security and Bidding document fee.

13.0 Bids received late/delayed due to any reasons whatsoever (including postal delays) shall be rejected and representative of such Bidder shall not be allowed to attend the bid opening.

14.0 BCPL shall not be responsible for any costs or expenses incurred by Bidder in connection with the preparation or delivery of Bids, site-visit and other expenses incurred during bidding process.

15.0 Sealed Bids shall be received upto the last date and time as specified above at C&P DEPART. ADMINISTRATIVE BUILDING, BRAHMAPUTRA CRACKER AND POLYMER LIMITED, LEPETKATA, DIBRUGARH-786006, ASSAM. Time and date of opening of Price Bids shall be intimated only to qualified and techno-commercially acceptable Bidder(s) at a later date. Incomplete offers shall not be considered for evaluation.

16.0 BCPL shall follow purchase preference policies as per prevailing guidelines of the Govt. of India.

17.0 Bids sent through Fax / E-Mail/Compact Disc/Pen drive shall not be accepted.

18.0 Bids from Consortium/ Unincorporated Joint Venture shall not be accepted.

19.0 Works executed on Unincorporated Joint Venture basis or consortium basis shall not be considered for the purpose of meeting Bidder's Qualification Criteria (BQC) as mentioned at clause no. 6 above.

20.0 BCPL reserve the right to reject any or all bids received without assigning any reason thereof.

21.0 Canvassing in any form by the Bidder or by any other agency on their behalf may lead to disqualification of their Bid.

22.0 Validity of bid shall be 3 (three) months from the final due date of opening of Techno-commercial (Un-priced) Bids. Unsolicited clarifications to the offer after opening of unpriced bids and / or change in the prices during the validity period would render the bid liable for rejection.

23.0 **Free Issue Material Taxation:**

"Service Tax on Free Issue Material as prevailing @ 4.944% shall be applicable as per Service Tax notification no. 24/2012 dated 06.06.2012 and shall be reimbursed by owner against submission of Cenvatable Invoices as documentary evidence. The value of free issue material envisaged to be Rs.720 Lakhs. . In case of any variation in the executed quantities, the amount on which service tax on Free Issue Material is applicable shall be modified in same proportion. In case of any subsequent changes in service tax as per Govt. Notifications & decision of The Customs, Excise and Service Tax Appellate Tribunal , the same shall be applicable accordingly."

24.0 Contact Person: DM(C&P), BRAHMAPUTRA CRACKER AND POLYMER LIMITED, LEPETKATA, DIBRUGARH-786006, ASSAM. Tel. No.: +91- 0373-2914636, Mobile: +91-9435736432, Email: ajdutta@bcplindia.co.in; bhaskar.barman@bcplindia.co.in

If you require any further information, feel free to contact us.

Yours faithfully,

For Brahmaputra Cracker and Polymer Limited,
(A Government of India Enterprise)

A J Dutta
Dy. Manager(Contracts & Procurement)
E-Mail: ajdutta@bcplindia.co.in
Ph no: 0373-2914636

PROFORMA FOR ACKNOWLEDGEMENT LETTER

(TO BE SUBMITTED ON BIDDER'S OWN LETTER-HEAD)

To

The DY. GENERAL MANAGER (C&P)
ADMINISTRATIVE BUILDING,
BRAHMAPUTRA CRACKER AND POLYMER LIMITED,
LEPETKATA, DIBRUGARH- 786006, ASSAM
Tel. No.: +91- 0373-2914637
Mobile : 08811023314
Email: kpremkumar@gail.co.in

ATTN.:- **MR. K. PREM KUMAR, DY. GENERAL MANAGER (C&P)**

SUBJECT: **COMPOSITE WORKS FOR RAILWAY SIDING TERMINAL OF M/s BRAHMAPUTRA CRACKER AND POLYMER LIMITED AT LEPETKATA (ASSAM)**
(BIDDING DOCUMENT NO. 6907-160-16-43-PK-T-3001)

Dear Sir,

We hereby acknowledge receipt of complete documents through website/ receipt of a complete set of Bidding Document along with enclosures for subject works as per the Master Index for preparation and submission of the Bid.

We undertake that the contents of the above Bidding Document shall be kept confidential and further that the drawings, specifications and documents shall not be transferred and that the said documents are to be used only for the purpose for which they are intended.

A) We intend to bid as requested for the subject works and furnish following details with respect to our quoting office:

(i) POSTAL ADDRESS : _____

_____

_____

(ii) TELEPHONE NUMBER : _____

(iii) TELEFAX NUMBER : _____

(iv) CONTACT PERSON : _____

(v) E-MAIL ADDRESS : _____

B) Contact person at Kolkata, if any:

(i) POSTAL ADDRESS : _____

_____

_____

(ii) TELEPHONE NUMBER : _____

(iii) TELEFAX NUMBER : _____

(iv) CONTACT PERSON : _____

(v) E-MAIL ADDRESS : _____

C) We are unable to bid for the reasons given below and we are returning back the entire set of Bidding Documents.

Reasons for non-submission of Bid:

_____

_____

_____

AGENCY'S NAME : _____

SIGNATURE : _____

NAME : _____

DESIGNATION : _____

DATE : _____

NOTE : Bidder is requested to furnish the details mentioned at (A) and (B) or (C) immediately after receipt of Bidding Document.

(SIGNATURE OF BIDDER)

INSTRUCTIONS TO BIDDER

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A GENERAL

1.0 INTRODUCTION

1.1 **M/s Brahmaputra Cracker & Polymer Ltd. (BCPL)**, hereinafter referred as ''Owner'' is putting up a grass root petrochemical complex at LEPETKATA, Dibrugarh, ASSAM, involving Ethylene Cracker, Down Streams, Utilities and Offsite. M/s Brahmaputra Cracker & Polymer Ltd. (BCPL) is a Joint Venture Company of M/s GAIL (India) Ltd., M/s Oil India Ltd., M/s Numaligarh Refinery Ltd. and Government of Assam.

Engineers India Limited (EIL) has been retained as Project Management Consultant (PMC) for the Project. M/s Brahmaputra Cracker & Polymer Ltd. (BCPL) invites sealed Bids for the work of "COMPOSITE WORKS FOR RAILWAY SIDING TERMINALAT LEPETKATA (ASSAM)" as detailed in the Bidding Document.

1.2 It shall be Bidder's responsibility to have thorough understanding of the reference documents, site conditions and specifications included in the Bidding Document.

2.0 COST OF BIDDING

2.1 The Bidder shall bear all costs associated with the preparation and delivery of its Bid, including costs and expenses related to visits to the site and the OWNER will in no case be responsible or liable for these costs regardless of the outcome of the bidding process.

3.0 ACKNOWLEDGEMENT & CONFIRMATION

3.1 Within 3 (Three) days of purchase/downloading of Bidding Document, Bidder shall acknowledge the receipt and confirm his intention to bid for the tendered work as per Proforma of Acknowledgement-Cum-Consent Letter enclosed in Bidding Document. Bidder also must intimate their intention of not quoting if they are not submitting Bid, within 7 days of purchase/downloading of the Bidding Document.

4.0 SPLIT-UP OF WORK

4.1 The total work shall be awarded to one agency and the scope of work shall not be split.

5.0 SITE VISIT

5.1 Location of Site – The Project Site is located at Lepetkata, P.O.-Borboruah, Dist. Dibrugarh (ASSAM). The nearest Railway Station/ Airport are at Dibrugarh.

5.2 Bidder is advised to visit and examine the site, its surrounding and familiarise himself with the existing facilities and environment, and collect all other information which he may require for preparing and submitting the Bid and entering into the Contract. Claims and objections due to ignorance of existing conditions or inadequacy of information will not be considered after submission of the Bid and during implementation.

5.3 The Bidder and any of his personnel or Agents will be granted permission by the OWNER to enter upon his premises and lands for the purpose of such inspection, but only upon the explicit condition that the Bidder, his personnel or agents will release and indemnify the OWNER and his personnel and agents from and against all liability in respect thereof and will be responsible for personnel injury (whether fatal or otherwise), loss of or damage to property and any other loss, damage, cost and expenses incurred as a result hereof. OWNER shall provide necessary assistance, if

required, to the Bidder(s) for the purpose of site visit.

5.4 Addresses

i) **Registered Office** – M/s Brahmaputra Cracker and Polymer Ltd; Hotel Brahmaputra Ashok, M.G. Road, Guwahati – 781001, Assam.

ii) **Project Office** - Main Fire Station, Site- Lepetkata, Post- Barbaruah, Distt.-Dibrugarh – 786007, Assam.

iii) **Contact Person at Site –** Mr. T.K. Sen, Resident Construction Manager-EIL, M/s Brahmaputra Cracker and Polymer Ltd, Phone- 0373-2914583, Mobile- 94357 10180; E-mail: eilbcpl6907@eil.co.in

B BIDDING DOCUMENT, CLARIFICATIONS AND AMENDMENT

6.0 BIDDING DOCUMENT

6.1 The Bidding Document shall be read in conjunction with any Amendment issued in accordance with Clause 8.1.

6.2 Bidding Document containing Commercial Part and Technical Part are issued when purchased from BCPL Office at Lepetkata. Bidder may alternately download the bidding document from the web site and shall submit their Bid on or before the time of submission of bid. Bids submitted without Tender Fee/Bidding Document Fee shall stand rejected. Bidder shall submit the Master Index enclosed with bidding document duly signed and stamped by the Bidder in token of having received and read all parts of the Bidding Documents and having accepted and considered the same in preparing and submitting the Bid.

6.3 The Bidder is expected to examine the Bidding Document, including all instructions, forms, terms, specifications and drawings in the Bidding Document. Failure to furnish all information required as per the Bidding Document or submission of a bid not substantially responsive to the Bidding Document in every respect may result in the rejection of the Bid.

6.4 Bidding documents once issued are non-transferable in other name and shall at all times remain the exclusive property of the OWNER with a licence to the Bidder to use the Bidding Documents for the limited purpose of submitting the bid.

7.0 CLARIFICATION OF BIDDING DOCUMENT

7.1 Although the details presented in this Bidding document consisting of Conditions of Contract, Scope of Work, Technical Specifications and Drawings have been compiled with all reasonable care, it is the Bidder's responsibility to ensure that the information provided is adequate and clearly understood.

7.2 Bidder shall examine the Bidding document thoroughly in all respect and if any conflict, discrepancy, error or omission is observed, Bidder may request information/ clarification/query of the Bidding Document in writing as per **Form-J/ Form-K to Proposal Forms** at the BCPL's mailing address indicated in the Instructions to Bidders. BCPL will respond in writing to any request for any information or clarification or query of the Bidding Document, which it receives up to the date mentioned in NIT/LIB. BCPL's response including an explanation of the query (Pre-Bid Reply) will be up loaded on BCPL's Website/will be sent by mail to all Bidders (without disclosing source of such query) who have been issued the Bidding Document. In case of downloaded Bidding Document from websites only those Bidders who have submitted acknowledgement cum consent letter to BCPL shall be issued BCPL's response as above.

7.3 Any failure by Bidder to comply with the aforesaid requirement shall not excuse the Bidder, after subsequent award of contract, from performing the work in accordance with the agreement.

7.4 Bidders are requested to resolve all their clarifications/queries to the Bidding Document before due date of submission of bid. Thereafter bidders are requested to submit their bid in total compliance to Bidding Document without any deviation/stipulation/clarification/assumption. Accordingly, bidder must submit format for "Compliance to bid requirement" as per **Form-D to Proposal Forms** duly filled in along with Unpriced part of bid. In case of bids not conforming to bidding document in totality and/or non-accompanied by necessary documents as asked for in the bidding document, Owner reserves rights to reject such bids without recourse to the Bidders.

7.5 The responses to Bidder's queries/ clarifications raised will be furnished as expeditiously as possible to all who have been issued the Bidding Documents. Any modification of the Bidding Document, which may become necessary as a result of the bidders query, shall be sent to all bidders through the issue of an Addendum/ Amendment.

8.0 AMENDMENT OF BIDDING DOCUMENT

8.1 At any time prior to the deadline for submission of bids, the Owner or his authorised representative(s) may, issue amendment in the form of Addendum during the bidding period or subsequent to receiving the bids. Any Addendum thus issued shall become part of Bidding Document and **Bidder shall submit a copy of the Addendum duly signed and stamped in token of his acceptance**. Addendum shall be issued to only those bidders, who have been issued the Bidding Document or submitted acknowledgement cum consent letter as per the Proforma enclosed in the Bidding Document.

8.2 In case Addendum is issued during the bidding period, Bidder shall consider its impact in his bid. In case Addendum is issued subsequent to receipt of bids, Bidder shall follow the instructions issued along with Addendum with regard to submission of impact on quoted price / revised price, if any.

8.3 **Agencies that have been issued/downloaded the Bidding Document and have submitted acknowledgement cum consent letter duly filled in as per proforma enclosed in the Bidding Document, indicating their intention to bid shall only be communicated regarding amendment to Bidding Document, if any.**

9.0 CONFIDENTIALITY OF BIDDING DOCUMENT

9.1 The Bidding Document is and shall remain the exclusive property of the OWNER without any right to Bidder to use them for any purpose except for the purpose of Bidding.

9.2 On no account will any agency to whom Bidding Documents is furnished, part with possession thereof or copy or take copies or tracings of any drawing, plan etc. It should be understood that the information therein is confidential, and that the Bidding Documents are therefore being furnished to Bidder in the strictest confidence.

C PREPARATION OF BID

10.0 LANGUAGE OF BID

10.1 The Bid prepared by the Bidder, all correspondence and documents relating to the bid exchanged by the Bidder and the Owner shall be written in the English language. Any printed literature/certificate/any other document furnished by the Bidder may be in another language, provided they are accompanied by an accurate translation of the relevant passages in the English language, in which case, for purpose of

interpretation of the Bid the English translation shall prevail.

11.0 JOINT VENTURE/CONSORTIUM BIDS.

11.1 Joint Venture/ Unincorporated Consortium Bids are not acceptable.

12.0 COMPLIANCE TO BID REQUIREMENT

12.1 It is expected that Bidder will submit bid based strictly on the terms and conditions and specifications contained in the Bidding Documents and will not stipulate any deviations. Should it, however, become unavoidable, deviations should be separately and specifically stipulated only in the prescribed Proposal **FORM-E.** In case Bidder stipulate deviations, Owner have the right to reject such bid at its absolute discretion without giving any opportunity for such Bidder to make good such deficiency.

12.2 Unsolicited Post Tender Modifications.

Bidders are advised to quote as per terms and conditions of the Bidding Document and not to stipulate deviations/ exceptions. Once quoted, the Bidder shall not make any subsequent price changes, whether resulting or arising out of any technical/ commercial clarifications and details sought on any deviations, exceptions or stipulations mentioned in the bid unless any Amendment to Bidding Document is issued by OWNER. Similarly, no revision in quoted price shall be allowed should the deviations stipulated by him are not accepted by OWNER and are required to be withdrawn by him in favour of stipulation of the Bidding Document. Any unsolicited proposed price change is likely to render the bid liable for rejection.

13.0 DOCUMENTS COMPRISING BID

13.1 The Bid should be prepared by the Bidder and shall be submitted in three parts viz. Part-I, Part-II & Part-III in three separate sealed envelopes:

i) PART- I - Techno-commercial / Unpriced Bid (in 1 Original + 4 Copies)

ii) PART-II - Price Bid (in 1 Original+ 1 Copy only, sealed in a separate envelope)

iii) PART-III - Bidding Document Fee, Earnest Money Deposit / Bid Security / Indemnity Bond (as applicable)

13.2 TECHNO-COMMERCIAL/ UNPRICED BID (PART-I)

The Bid prepared by the Bidder shall comprise the following components:

i) Bid Form as per **FORM-A**.

ii) Master Index enclosed duly signed and stamped by the Bidder in token of having received and read all parts of the Bidding Documents and having accepted and considered the same in preparing and submitting the Bid.

iii) EMD/Bid Security as per clause 17.0.

iv) Bidding Document Fee in case Bidder has submitted their Bid on the basis of downloaded document.

v) Power of attorney in favour of Signatory(ies) of the bid.

vi) Details of experience in last 7 years as per **FORM- B** and Details of Specific work experience meeting the Experience Criteria specified as per **FORM-B1**.

vii) Details of concurrent commitments as per Proposal **FORM-C – Not applicable**

viii) Copy of Partnership Deed in case of Partnership Firm or Memorandum &

Article of Association in case of Limited Company.

ix) Proposed schedule for completion of major activities in the form of bar chart.

x) Compliance to Bid requirement as per **FORM-D** or in case of Deviation/ Exceptions (Bidder is requested not to stipulate any deviation), as per proposal **FORM-E**. (Sheet-1 for Commercial Section and Sheet-2 for Technical Section).

xi) Check List duly filled in as per **FORM-F**.

xii) Reply to Commercial Questionnaire as per **FORM-G**.

xiii) Details regarding PF as per **FORM-H**.

xiv) Complete copy of audited Annual Reports for the last three years with Financial Details as per **FORM-I.**

xv) Compliance to Key Construction Manpower and Minimum Requirement of Equipment to be deployed as per **ANNEXURE-VII** and **ANNEXURE-IX** respectively, of Special Conditions of Contract.

xvi) Fresh Solvency Certificate from Bidder bankers. Date of issue of this certificate should not be earlier than 1 year from due date of opening of Techno-Commercial part.

xvii) Technical offer and Engineering details, if any, required as per Bidding Document.

xviii) Blank copy (without price) of complete Schedule of Rates/ Price duly signed and stamped.(only one copy)

xix) Any other information required in the Bidding Documents or considered relevant by the Bidder.

13.3 PRICE BID (PART-II) shall consist of the following

13.4 PRICE BID (Part-II)shall consist of the following

i) Form of Bid as per format given in PROPOSAL FORM as per **FORM-'A'**.
ii) Hard Copy of Schedule of Rates, (FORM SP-0 and SP-1) duly filled in and completed in all respects and shall be signed & stamped on each page
iii) Duly filled in format for Extended Stay Compensation (Form SP-2)
iv) Details of Service Tax- **Form SP-3**.
v) Details of Excise Duty included for Indigenous Supplies - **Form SP-4A**
vi) Total Cenvatable CVD and SAD amount included in Quoted Prices- Form **SP-4B**

No stipulation, deviation, terms & conditions, presumption, basis, etc. shall be stipulated in Price Part of the bid. Any condition if stipulated shall be treated as null and void and shall render the bid liable for rejection. There shall not be any overwriting. **The price quoted in hard copy of Schedule of Rates shall only be considered for evaluation.**

13.5 PART-III: Bidding Document and EMD/Bid Security (where applicable).

Third Sealed Cover marked as **"Bidding Document Fee, EMD/Bid Security"**, containing the EMD in Original, where applicable.

14.0 BID PRICES

14.1 Unless stated otherwise in the Bidding Documents, the Contract shall be for the total works as described in Bidding Document, based on the Schedule of Rates submitted by the Bidder and accepted by the Owner.

14.2 Bidder shall quote price after careful analysis of cost involved for the performance of the work considering all parts of the Bidding Document. In case any activity though specifically not covered in description of item under 'Schedule of Rates (SOR)' but is required to complete the work which could be reasonably implied/inferred from the contents of the Bidding Document, the prices quoted shall be deemed to be inclusive of cost incurred for such activity.

14.3 The prices shall be based on conditions specified in General Conditions of Contract, Special Conditions of Contract, Scope of Work, Scope of Supply, Technical Specifications, Drawings and other contents of Bidding Document.

14.4 The Contracted rates/prices are inclusive of all Taxes, Duties, Levies, Octroi, Cess etc. but excluding Entry Tax on Capital Goods permanently incorporated in the works. Entry Tax shall be paid by the Contractor for all other Goods. For tools & tackles brought in by contractor (which will not get transferred during execution of work contract) contractor has to bear the liability of entry tax. Further Contracted rates/prices are exclusive of Cenvatable service tax which shall be reimbursed by Owner at actual against submission of Cenvatable invoices. No price variation on account of any change in other Taxes, Duties, Levies, Octroi, Cess etc. including imposition of new taxes shall be allowed.

14.5 Prices quoted by the Bidder, shall remain firm & fixed and valid until completion of the Contract except as specified in the Bidding Document.

14.6 Overall rebate, if any, must be indicated in the Format for Schedule of Rates only. Conditional rebate, if offered, shall not be considered for evaluation.

14.7 Bidder shall be solely responsible for ascertaining all types of taxes and duties applicable for providing the services as mentioned in the scope of work. OWNER shall deduct income tax as applicable from the payments due to the Bidder under the contract.

15.0 CURRENCIES OF BID AND PAYMENT

15.1 **Bidders shall quote the prices in Indian Rupees only**.

15.2 All payment to be made by Owner shall be made in Indian Rupees only.

16.0 BID VALIDITY

16.1 Bid submitted by Bidder shall remain valid for a minimum period of 03 (three) months from the date of opening of Bid Security (Part-III) and Techno-Commercial (Part-I) Bids. Bidders shall not be entitled during the said period of four months, without the consent in writing of the Owner, to revoke or cancel their Bid or to vary the Bid given or any term thereof. In case of Bidders revoking or cancelling their Bid or varying any terms in regard thereof without the consent of Owner in writing, Owner shall forfeit EMD paid by them along with their bids.

16.2 Owner may solicit the bidders consent to an extension of the period of validity of bid. The request and the responses thereto shall be made in writing (or by Fax/E-mail). If the Bidder agrees to the extension request, the validity of Bank Guarantee towards EMD shall also be suitably extended. However, bidders agreeing to the request for extension of validity of bid will not be permitted to modify the bid.

17.0 BID SECURITY / EARNEST MONEY DEPOSIT (EMD)

17.1 Bidder shall furnish, as part of its Bid, a Bid Security for an amount as indicated in the NIT/LIB. The Bids not accompanied with Bid Security or Bid Security not as per Proforma given in the Bidding Document shall be considered as non-responsive and such Bids shall be rejected. However, Micro or Small Enterprise under the Micro, Small and Medium Enterprises Development Act, 2006 registered with NSIC or from the authorities as mentioned elsewhere in the Bidding Document for similar works with valid certificate and Indian Central Public Sector Undertakings/ Enterprises are exempted from furnishing Bidding document fee.

17.2 The bid security (interest free) in favour of **Brahmaputra Cracker and Polymer Limited payable at Dibrugarh, Assam** for the amount indicated in Letter Inviting Bid shall be in the form of Demand Draft / Bankers Cheque drawn on any Indian Scheduled Bank or a branch of an International Bank situated in India and registered with Reserve Bank of India as scheduled foreign bank. Bid Security / EMD can also be submitted in the form of Bank Guarantee to be issued by any Indian Scheduled Bank or a branch of an International Bank situated in India and registered with Reserve Bank of India as scheduled foreign bank. However, other than the Nationalised Indian Banks, the banks whose BGs are furnished, must be commercial banks having net worth in excess of Rs. 1000 million or US $ 22 million and a declaration to this effect should be made by such commercial bank either in the bank guarantee itself or separately on their letter head.
The bank guarantee shall be valid for 2 months beyond validity of bid i.e. 5 (Five) months beyond deadline for bid submission.

17.3 Bid securities of unsuccessful Bidders will be discharged or returned, as promptly as possible upon award of Contract.

17.4 Bid Security of the successful Bidder will be discharged or returned upon the Bidder's executing the Contract, and furnishing the performance guarantee.

17.5 The bid security may be forfeited:

i) if a Bidder withdraws its bid during the period of Bid validity specified by the Bidder on the Bid Form, or

ii) if a Bidder modifies his bid during the period of Bid Validity except if such modification is solicited by OWNER in writing, or

iii) ***if a Bidder does not accept the correction of arithmetical errors as per Sub-Clause 28.0 of ITB hereof, or***

iv) in case of a successful Bidder, if the Bidder fails, within the specified period:

a) To sign the Contract.

b) To furnish the Contract Performance Security.

17.6 The bid security shall be denominated in the currency as mentioned in Letter Inviting Bid/Notice Inviting Tender.

18.0 ARRANGEMENT OF BID

18.1 The Bidder shall prepare one original and four copies of the Techno-commercial bid and one original price bid, clearly marking as: “ORIGINAL – TECHNO-COMMERCIAL” and “COPY NO.1 – TECHNO-COMMERCIAL BID (PART-I)”, etc. as appropriate. In the event of discrepancy between the original and any copy, the original shall prevail. PRICE IN ORIGINAL shall be submitted in a separate sealed envelope super scribing “PRICE BID”.

18.2 The original and all copies of the bid shall be typed or written in indelible ink (in case of copies, Photostats are also acceptable) and shall be signed by person(s) duly authorised to sign on behalf of the Bidder. All pages of bid shall be stamped and initialled by person(s) signing the bid.

18.3 Master Index enclosed with Bidding Document duly signed and stamped by the Bidder in token of having received and read all parts of the Bidding Documents and having accepted and considered the same in preparing and submitting the Bid.

D BID SUBMISSION

19.0 SEALING AND MARKING OF BID

19.1 The Bidder shall seal the original copy of techno-commercial bid, the original copy of price bid and each copy of the techno-commercial bid in separate envelopes and paste appropriate CUT-OUT SLIP enclosed with the Bidding Document.

19.2 The Bidder shall seal the original and each copy of the bid in an inner and outer envelope and duly marked the envelopes "Original" and "Copy".

19.3 The inner and outer envelopes shall be pasted with appropriate CUT-OUT SLIP enclosed with Bidding Document and shall be addressed to BCPL at the address mentioned in the CUT-OUT SLIP.

19.4 In addition to above, the outer envelope shall indicate the name and address of the Bidder to enable the bid to be returned unopened in case it is declared “Late".

19.5 If the outer envelope is not sealed & marked as above, the Owner or his authorised representative(s) will assume no responsibility for the misplacement or premature opening of the bid.

19.6 Cut out slips are enclosed with bidding document for pasting it on the outer envelope and inner envelopes. In case of extension of deadline of bid submission, the date specified on the cut-out slip shall be changed by the bidder accordingly.

20.0 DEADLINE FOR SUBMISSION OF BIDS

20.1 Bids must be submitted by the time and date mentioned in the Letter Inviting Bid at the address stated therein.

20.2 The Owner or his authorised representative(s) may, at its discretion, extend the deadline for submission of bids by issuing an Amendment in accordance with Clause 8.1 of above, in which case all rights and obligations of the Owner and the Bidder previously subject to the original deadline will thereafter be subject to the deadline as extended.

21.0 LATE BIDS

Any bid received by the BCPL after the deadline for submission of bids will be declared “Late" and rejected and returned unopened to the Bidder

22.0 MODIFICATION AND WITHDRAWAL OF BIDS

22.1 The Bidder may modify or withdraw its bid after the bid’s submission, provided that written notice of the modification or withdrawal is received by the Owner prior to the deadline prescribed for submission of bids.

22.2 The Bidder's modification or withdrawal notice shall be prepared, sealed, marked and despatched in accordance with the provisions of procedure for submission of bids. A withdrawal notice may also be sent by Fax/E-mail but must be followed by signed confirmation copy. No bid may be withdrawn in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder.

22.3 No bid shall be modified after the deadline for submission of bids.

E BID OPENING AND EVALUATION

23.0 OPENING OF TECHNO-COMMERCIAL BIDS

23.1 The Techno-commercial part of the Bid shall be opened in the presence of attending representatives of Bidder. The attending representative(s) of the Bidder may have to produce authorisation letter from their competent authority, otherwise they will not be allowed to attend the Bid opening. Number of representative will be restricted to maximum one person. The Bidder's representative who is present shall sign a Bid opening statement evidencing their attendance.

23.2 The Bidder's names, modifications and Bid withdrawals, and the presence or absence of requisite Bid Security/EMD, and such other details as the Owner's discretion, may consider appropriate, will be announced, and recorded at the opening.

24.0 QUALIFICATION OF BIDDERS

24.1 BCPL will examine the bids to determine whether they are complete, whether required bid securities/indemnity bond have been furnished, whether the documents have been properly signed, and whether the bids are generally in order.

24.2 The bids without requisite Bidding Document fee/Bid Security/Indemnity Bond (as applicable) will not be considered and bids of such bidders shall be rejected.

24.3 Bidder(s) intending to participate shall fulfil the Qualification Criteria specified in the Letter Inviting Bid. The experience and financial details submitted by the Bidders shall be evaluated with respect to the Qualification Criteria specified in the Letter Inviting Bid. Bidders are requested to submit all Qualification details along with relevant supporting documents in the first instance itself as BCPL may finalise the Qualification based on details submitted without asking for any additional details.

Bids of only those Bidders who are found to qualify based on the Qualification Criteria specified in the Letter Inviting Bid shall be considered for detailed Techno-commercial evaluation. Decision of BCPL in this regard shall be final and binding.

24.4 While evaluating the Bidder's conformity with Experience Criteria, only such works shall be taken into consideration, the details of which have been submitted by the Bidder as per FORM-B1 of Proposal Forms along with copy of Work Order/Notification of Award and copy of proof of Completion.

i) Copy of Work Order/Notification of Award of work is a mandatory document, which establishes that the Bidder has been awarded a work, which is claimed to be meeting the experience criteria.

ii) Submission of adequate proof of Completion which establishes that the work under reference has been completed, handed over to the Owner.

iii) In case the above mandatory documents are not enclosed with FORM-B1 of Proposal Forms, such work shall not be considered in evaluation for meeting the Experience Criteria.

24.5 In addition to above, the Bidder shall also furnish documentary evidence by way of copies of Audited Balance Sheets including Profit & Loss Account, etc. along with the Bid for meeting the Financial Criteria.

25.0 CLARIFICATION OF BIDS

25.1 Owner or his authorised representative(s), if necessary, will obtain clarifications on the Bid by requesting for such information/ clarifications from any or all Bidders, either in writing or through personal contact, as may be necessary. Bidder will not be

permitted to change the substance of Bids after opening of Bids.

25.2 Bidder shall submit all additional documents in one original and three copies.

26.0 EVALUATION OF TECHNO- COMMERCIAL BID

26.1 Prior to detailed evaluation of bids, the Owner or his authorised representative(s) will determine whether each bid (i) is substantially responsive to the requirements of the bidding documents; and (ii) provides any clarifications and/ or require pursuant to clause 25.0. Bids without EMD/Bid Security, unless exempted will be outrightly rejected.

26.2 A substantially responsive bid is one, which conforms to all the terms and conditions and requirements of the Bidding Document without material deviation or reservation. A material deviation or reservation is one (i) which affects in any substantial way the scope, quality, or performance of the works; (ii) which limits in any substantial way, inconsistent with the Bidding Documents, the Owner's rights or Bidder's obligation under the Contract.

26.3 If bid is not substantially responsive, the Owner or his authorised representative(s) will reject it.

26.4 Bidder shall not be allowed to submit any Price Implication or Revised Price after submission of Bid, unless there is change in the stipulations of the Bidding Document and such changes are incorporated through an Amendment. In case Exceptions and Deviations submitted by Bidder along with Bid are not considered as acceptable and no Amendment is issued, then in such a case the Bidders would be required to withdraw such Exceptions/Deviations in favour of stipulations of the Bidding document and Bidders would not be eligible for submission of Price Implication/Revised Price, failing which such Bid(s) shall be considered as non responsive and rejected.

26.5 Bidder, in their own interest, should ask any clarification, technical/commercial, as per **FORM-J/FORM-K** within the date mentioned in Letter Inviting Bid, and OWNER would furnish all such clarifications promptly, and if such clarifications require any change in the stipulations of the Bidding document, then an Amendment shall be issued along with the clarification, it being expressly understood that Bidder shall submit their Bids in total compliance of the Bidding document and also taking in to consideration of such clarifications.

26.6 Owner or his authorised representative(s) reserves the right to use in-house information for assessment of capability of bidder and their performance on last completed job.

26.7 Bidder shall furnish all necessary documents like work order, completion certificate and Audited Annual Report etc. in respect of their meeting the above criteria.

26.8 The Price bid of only those bidders who meet the above Experience and Financial criteria shall be considered for further evaluation and opening of Priced Bid.

27.0 OPENING OF PRICE BID

27.1 Priced commercial part of only those Bidders who meet the Experience and Financial Criteria and whose bids are considered techno-commercially acceptable shall be opened. Bidders selected for opening of their price bids shall be informed about the date of price bid opening. Bidders may depute their authorised representative to attend the opening. During price bid opening, only total price and Increase/Decrease, as quoted shall be read out.

28.0 EVALUATION OF PRICE BIDS

28.1 The price quoted by the Bidder shall be checked for arithmetic correction, if any, based on rate filled by the Bidder in the Schedule of Rates. If some discrepancies are found in amount /rate indicated in Hard copy and Soft copy of Schedule of Price (Short Description) the amount / rate indicated in hard copy of Schedule of Price/Short Description) shall prevail and shall be considered for evaluation.

28.2 If some discrepancies are found between the rate/ amount given in figures, the total amount shall be corrected as per the following procedure, which shall be binding upon the Bidder:

i) When the rate quoted by bidder in figure does not correspond to amount, the rate quoted by the bidder shall be taken as correct.

28.3 To arrive at the evaluated price, loading on total quoted price, wherever applicable, shall be done for as per following:

i) Extended stay compensation as per FORM-SP-2 as quoted by the bidders in line with clause 47.0 of Special Conditions of Contract.

ii) Loading for unquoted items as per clause 28.4 below.

iii) Price Adjustment on account of Cenvatable Excise Duty as quoted in Form SP-4A, of Schedule of Price.

iv) Price Adjustment on account of Cenvatable Service Tax, CVD/SAD as quoted in Form SP-3, SP-4B respectively of Schedule of Price.

28.4 In case a Bidder does not quote for any items of Schedule of Rates, and the estimated price impact of unquoted items is more than 10% of his quoted price, the bid will be rejected. If such price impact of unquoted items is 10% or less of his total quoted price and under special circumstances, Owner decide to consider the bid, then for the purpose of comparison, the unquoted items shall be loaded by price impact calculated on the basis of highest of the rates quoted by other Bidders. If such Bidder happens to be the selected Bidder, price of unquoted items shall be treated as included.

28.5 Any uncalled for lump sum/ percentage or adhoc reduction/ increase in prices, offered by the Bidders after opening of the prices, shall not be considered. However, if reduction is from the recommended Bidder, such reduction shall be taken into account for arriving at the contract value.

28.6 If discounts and prices etc. are not filled up in the PRICED BID and are not as per the requirements of the Bidding Document, the same shall be omitted from evaluation.

28.7 Evaluation shall be done based on Bidder's Qualification Criteria (BQC) mentioned at clause no. 6 of NIT & L1 (Lowest Bidder) evaluated price for complete job considering evaluation methodology mentioned above & order shall be released only on L1 bidder of complete job.

29.0 CONTACTING THE OWNER OR HIS AUTHORISED REPRESENTATIVE(S)

29.1 Bidder is advised not to contact Owner or his authorised representative(s) on any matter relating to its bid from the time of Bid opening to the time CONTRACT is awarded, unless requested to in writing. Any effort by the Bidder to influence the Owner or his authorised representative(s) in any of the decision in respect of Bid evaluations or AWARD OF CONTRACT will result in the rejection of Bid.

F AWARD OF CONTRACT

30.0 OWNER'S RIGHT TO ACCEPT OR REJECT ANY BID

30.1 The OWNER reserves the right to accept or reject Bid and to annul the Bidding process and reject the Bid at any time prior to award of contract, without thereby incurring any liability to the affected Bidder, without any obligation on the grounds or the reasons for the OWNER'S action.

30.2 OWNER also reserves the right to negotiate the quoted prices before award of work.

31.0 NOTIFICATION OF AWARD

31.1 The OWNER will notify the successful Bidder in writing by Fax of Acceptance (FOA) that their bid has been accepted. The Fax of Acceptance (FOA) will constitute the formation of a Contract until the Contract Agreement has been signed.

32.0 CONTRACT AGREEMENT

32.1 Contract documents for agreement shall be prepared after the acceptance of bid. Until the final contract documents are prepared and executed this bid document together with the annexed documents, modifications, deletions agreed upon by the OWNER and Bidder's acceptance thereof shall constitute a binding contract between the successful Bidder and the OWNER based on terms contained in the aforesaid documents and the finally submitted and accepted prices.

32.2 The Contract document shall consist of the following:

i) Original Bidding Document along with its enclosures issued.

ii) Amendment/Corrigendum to original Bidding Document issued, if any.

iii) Fax/Letter of Acceptance.

iv) Detailed Letter of Award/Acceptance along with enclosures attached therewith.

33.0 SIGNING OF CONTRACT

33.1 The successful Bidder shall be required to execute an AGREEMENT in the Proforma given in the Bidding Document on non-judicial stamp paper of appropriate value (the cost of stamp paper shall be borne by the contractor) within 15 days of the receipt of Notification of Acceptance of Tender. In the event of failure on the part of the successful Bidder to sign the agreement within the above stipulated period, the bid security shall be forfeited and the Notification of Acceptance of Tender shall be considered as cancelled.

34.0 CONTRACT PERFORMANCE SECURITY

34.1 Within Fifteen (15) days from the date of notification of award of works by the OWNER, the successful Bidder shall furnish the required Contract Performance Security for an amount equal to 10% (Ten Percent) of the total Contract Price in the form of a Bank Guarantee in accordance with Clause No. 24.0 of General Conditions of Contract.

34.2 Failure of Bidder to comply with requirement of clauses 33.1 and 34.1 above shall constitute sufficient grounds for annulment of the award of work and forfeiture of bid security.

34.3 Small Scale Industries Units registered with the NSIC, under its Single Point Registration Scheme shall be exempted from submission of Security Deposit/ Contract Performance Guarantee to the Monetary Limit for which the unit is registered.

35.0 ERRANT BIDDER

35.1 In case after price bid opening the lowest evaluated bidder (L1) is not awarded the job for any mistake committed by him in bidding or withdrawal of bid or varying any term in regard thereof leading to re-tendering, BCPL shall forfeit Earnest Money paid by the bidder and such bidders shall be debarred from participation in re-tendering of the same job(s)/item(s).

36.0 CONTACTING OWNER

Bidders are advised not to contact Owner on any matter relating to its bid from the time of Bid opening to the time CONTRACT is awarded, unless requested to in writing. Any effort by a Bidder to influence the OWNER in any of the decision in respect of Bid evaluations or award of CONTRACT will result in the rejection of Bid.

PROPOSAL FORMS

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FORM -A

BID FORM

To

Brahmaputra Gas Cracker and Polymer Limited

Guwahati, Assam

Dear Sir,

After examining/reviewing the Bidding Documents …… ……for General and Special Conditions of Contract and schedule of rates etc. the receipt of which is hereby duly acknowledged, we, the undersigned, pleased to offer to execute the whole of the Job of …… …… and in conformity with, the said Bid Documents, including Addenda Nos. .....

We confirm that this bid is valid for a period of three (03) months from the date of opening of Techno-Commercial Bid, and it shall remain binding upon us and may be accepted by any time before the expiration of that period.

If our bid is accepted, we will provide the Contract Performance Security equal to 10% (ten per cent) of the Contract Price, for the due performance with in fifteen days of such award.

Until a final Agreement is prepared and executed, the bid together with your written acceptance thereof in your notification of award shall constitute a binding Agreement between us.

We understand that Bid Document is not exhaustive and any action and activity not mentioned in Bid Documents but may be inferred to be included to meet the intend of the Bid Documents shall be deemed to be mentioned in Bid Documents unless otherwise specifically excluded and we confirm to perform for fulfilment of Agreement and completeness of the Work in all respects within the time frame and agreed price.

We understand that you are not bound to accept the lowest priced or any bid that you may receive.

Place:
Signatory
Date:

Signature of Authorised

Name:
Designation:
Seal:

Tender No. ……..

Offer No. & Date: ……

FORM – B

D E L E T E D

FORM – B1

FORMAT FOR SPECIFIC WORK MEETING THE EXPERIENCE CRITERIA

Bidder shall furnish their Experience for similar work with all details and documents as mentioned in this Specific Experience Format which are in conformity with Bidder's Qualification Criteria mentioned in Notice Inviting Tender (NIT). In case of more than one work, furnish details for all such Works

S. NO.	DESCRIPTION	DETAILS
Details of similar works executed by bidder (Complying the requirement of NIT)		
1.	Name of Project and its location	
2.	Description of work	
3.	Name of Owner, Postal Address, Phone/ Fax No./ E-mail Address	
4.	Name of Consultant, Postal Address, Phone/ Fax No../ E-mail Address	
5.	Contract Value: (a) Awarded (b) Final Executed (c) Component of Mechanical work involving piping & equipment erection .	 Rs._____ Rs. _____ Rs._____
	Milestone Dates	• Date of award : _____ • Starting date:_____ • Scheduled Completion Date: _____ • Actual Completion Date: _____ • Reasons for delay, if any: _____ _____ _____ _____

S. NO.	DESCRIPTION	DETAILS
6.	Supporting Document for Experience Criteria	• Whether copy of Work Order/ Contract Agreement enclosed YES NO Ref. No.: _____ Dated _____ • Whether Completion Certificate enclosed. YES NO Ref. No.: _____ Dated _____ Date of Completion _____
	Supporting Document for Financial Criteria	• Whether Annual Turnover Statement and P&L account is enclosed. YES NO If Yes, submitted for the financial years 1. _____ 2. _____ 3. _____ • Whether copy of Banker's certificate, if required confirming the availability of line of credit to meet the working capital as mentioned in NIT is enclosed. YES NO
7	CONFIRMATIONS	BIDDER'S CONFIRMATION
7.1	CONFIRM THAT YOU HAVE COMPLETED THE ABOVE WORK WITHIN LAST 7 YEARS FROM BID DUE DATE SUBMISSION.	
7.2	CONFIRM THAT SUPPORTING DOCUMENTS AS PER SL. NO.6 ABOVE HAS BEEN SUBMITTED.	

S. NO.	DESCRIPTION	DETAILS
7.3	CONFIRM THAT THE INFORMATIONS FURNISHED BY YOU ARE CORRECT AND DO NOT HAVE ANY MISREPRESENTATION	
7.4	CONFIRM THAT ALL DETAILS AS PER THIS FORMAT ALONGWITH SUPPORTING DOCUMENTS HAS BEEN FURNISHED IN ORDER TO ESTABLISH THE EXPERIENCE AND FINANCIAL CRITERIA. FAILING WHICH THE BID MAY NOT BE SHORTLISTED/ PRE-QUALIFIED FOR FURTHER EVALUATION.	

Bidder to use separate format for different works

SIGNATURE OF BIDDER : _____

NAME OF BIDDER : _____

COMPANY SEAL : _____

FORM – C

DELETED

FORM-D

COMPLIANCE TO BID REQUIREMENT

We hereby agree to fully comply with, abide by and accept without variation, deviation or reservation all technical, commercial and other conditions whatsoever of the Bidding Documents and Addendum(s) to the Bidding Documents, if any, for subject work issued by Engineers India Limited.

We hereby further confirm that any terms and conditions if mentioned in our bid (Un-priced as well as Priced Part) shall not be recognised and shall be treated as null and void.

SIGNATURE OF BIDDER : _____

NAME OF BIDDER : _____

COMPANY SEAL : _____

FORM–E (Sheet 1 of 2)

EXCEPTIONS AND DEVIATIONS
(FOR COMMERCIAL PART)

SL.NO	REFERENCE OF BIDDING DOCUMENT		SUBJECT	DEVIATIONS
	PAGE NO.	CLAUSE NO.		

NOTE: This shall be submitted separately for Commercial & Technical Sections.

SIGNATURE OF BIDDER : _____

NAME OF BIDDER : _____

COMPANY SEAL : _____

FORM–E (Sheet 2 of 2)

EXCEPTIONS AND DEVIATIONS (FOR TECHNICAL PART)

SL.NO	REFERENCE OF BID DOCUMENT		SUBJECT	DEVIATIONS
	PAGE NO.	CLAUSE NO.		

NOTE: This shall be submitted separately for Commercial & Technical Sections.

SIGNATURE OF BIDDER : _____

NAME OF BIDDER : _____

COMPANY SEAL : _____

FORM-F

CHECK LIST FOR SUBMISSION OF BID

Bidder is requested to fill this check list and ensure that all details/documents have been furnished as called for in the Bidding Document along with duly filled in, signed & stamped checklist **with each copy of the "Unpriced** bid (Part – I)".

Please tick the box and ensure compliance:

(1) Bid Forwarding Letter as per FORM-A

Submitted ☐

(2) Power of Attorney in Favour of the person who has signed the bid on stamp paper of Appropriate value.

Submitted ☐

(3) DELETED

(4) Specific Experience along with supporting documents meeting the Experience Criteria stipulated in NIT as per FORM-B1.

Submitted ☐

(5) Copies of Work Order & Completion Certificate

Submitted ☐

(6) Audited Balance Sheets and Profit and Loss account statement for preceding three Financial Years as per FORM-E to Additional Formats

Submitted ☐

(7) Letter from bank conforming the availability of Line of Credit to meet the specified working capital.

Submitted ☐

(8) ~~Concurrent Commitments as per FORM-C~~

Submitted ☐

(9) An overall schedule in the form of Bar Chart for quoted part(s)

Submitted ☐

(10) Compliance to Bid Requirement as per FORM-D.

Submitted. ☐

(11) Exceptions/ Deviations as per FORM-E both technical

and commercial part (Unpriced)

Submitted ☐

(12) Reply to commercial questionnaire as per FORM-G with Bidder's reply/ confirmation for each Sl. Nos.

Submitted ☐

(13) Details of PF Registration as per FORM-H

Submitted ☐

(14) Financial Details as per FORM-Ia & Ib

~~Submitted~~/ Not Applicable ☐

(15) Declaration by the Bidder as per FORM-L

Submitted ☐

(16) Reply to Technical questionnaire (if enclosed in technical part) with Bidder's Reply/ Confirmation for each Sl. No.

Submitted ☐

(17) Blank copy (without price) of Price Part i.e. Schedule of Rates for quoted part(s)

Submitted ☐

(18) Technical Details/ Documents specified in Technical part.

Submitted ☐ Not Applicable ☐

(19) EMD & Cost of Bidding Document

Submitted ☐

(20) MOU/AOA/Partnership Deed

Submitted ☐

(21) Certificate/ Authentication from Statutory Auditor/ Chartered Account as per Additional Format to Proposal Form

Submitted ☐

CONFIRM THE FOLLOWING

(1) All pages of the bid have been page numbered in sequential manner. YES ☐

(2) The bid has been submitted in requisite number of copies as specified in Special Instructions to Bidders

YES ☐

(3) Master Index and Copy of Addendum/ Amendment, if any, has been submitted along with offer, duly signed and stamped on each page.

YES ☐

(4) Blank copy (without price) of Complete Schedule of Rates/ Price duly signed and stamped on each page has been submitted.

YES ☐

(5) Please confirm that Additional Formats attached with this proposal form have been duly filled in signed and stamped.

YES ☐

SIGNATURE OF BIDDER :_____
NAME OF BIDDER : _____
COMPANY SEAL : _____

FORM-G

COMMERCIAL QUESTIONNAIRE

Bidder's reply/ confirmation as furnished in the Commercial Questionnaire (CQ) shall supersede the stipulations mentioned elsewhere in their bid.

SL. NO.	BCPL'S/ EIL'S QUERY	BIDDER'S REPLY/ CONFIRMATION
1.0	Confirm that your Bid is valid for 03 (Three) months from the last date of submission of Bid.	
2.0	Confirm that the following documents are submitted with Part-I:	
a)	All documents as per CHECK LIST.	
b)	Master Index is submitted in unpriced part duly signed and stamped on each page.	
c)	Copy of Addendum/ Amendments as a token of acceptance (Applicable, if issued).	
3.0	Confirm that price has been submitted in a separately sealed envelope super scribing "PRICE PART" in One original.	
4.0	Schedule of Rates/Price	
a)	Confirm that rate/ price has been quoted for all items of SOR.	
b)	Confirm that deviation/terms & conditions are not mentioned in the price part. In case any terms and condition is mentioned in the price part, the same shall be treated as null and void.	
c)	Confirm that correction fluid is not used in the price part. (In case of any correction, the same shall be signed and stamped by authorised signatory.)	
5.0	Confirm your compliance to TERMS AND CONDITIONS of Bidding Document.	
6.0	Confirm that you have studied complete Bidding Document including Technical and Commercial part and your Bid is in accordance with the requirements of the Bidding Document.	
7.0	Confirm your compliance to total Scope of Work mentioned in the Bidding Document.	
8.0	Confirm your acceptance for `Scope of Supply' mentioned in the Bidding Document and confirm that all materials shall be supplied as per Standards and Specification.	

SL. NO.	EIL'S QUERY	BIDDER'S REPLY/ CONFIRMATION
9.0	Confirm your acceptance for Time Schedule as mentioned in Bidding Document.	
10.0	Confirm that your quoted price includes all taxes & duties as applicable for this Work in accordance with the provision of GCC and SCC.	
11.0	Confirm that your quoted price includes all types of insurance as per the provisions of GCC and SCC.	
12.0	Confirm that all costs resulting from safe execution of Work, such as safety practices, use of protective clothing, safety glasses and helmet, safety precaution taken during monsoon, or any other safety measures to be undertaken by the Contractor for execution of work are included in the quoted rates.	
13.0	Confirm that while submitting your price, you have taken consideration of scope of supplies, scope of work and technical requirement mentioned in Bidding Document.	
14.0	Confirm that you have your own QA/QC programme for executing this work. In case of award of work, you will submit all QA/QC documents as per specification No. 6-78-0001.	
15.0	Confirm Compliance to the following: i) Minimum required equipments, tools & tackles to be mobilised as per Annexure-IX to SCC ii) Key Construction Manpower to be deployed at site as per Annexure-VII to SCC.	
16.0	Confirm that you are meeting the Experience Criteria as mentioned in Notice Inviting Tender, and you have submitted **Experience Details as per FORM-B1 of Proposal Forms along with all the details.**	
17.0	Confirm that you are meeting the **Financial Criteria as mentioned in Notice Inviting Tender and you have submitted all the details as per Annexure-Z of additional formats of Proposal Forms** along with all the details.	
18.0	**Please confirm that your Bid does not have any deviation to terms and conditions of the Bidding Document**.	
19.0	Please confirm that your Bids, complete in all respects, have been submitted in requisite copies as mentioned in Instructions to Bidders.	

SL. NO.	EIL'S QUERY	BIDDER'S REPLY/ CONFIRMATION
20.0	Bidder to confirm whether they require the interest bearing Mobilisation Advance as per para 1.1 of Terms of Payment. In case the bidder does not indicate the requirement of Mobilisation, it shall be presumed that the bidder does not require the Mobilisation Advance and their offer shall be evaluated accordingly.	

SIGNATURE OF BIDDER :_____

NAME OF BIDDER : _____

COMPANY SEAL : _____

FORM-H

DETAILS OF P.F. REGISTRATION

Bidder to furnish details of Provident Fund Registration:

PF REGISTRATION NO. :

DISTRICT & STATE :

We hereby confirm that the above PF Account is under operation presently and shall be used for all PF related activities for the labour engaged by us in the present work (if awarded to us).

SIGNATURE OF BIDDER : _____

NAME OF BIDDER : _____

COMPANY SEAL :_____

FORM–I a

D E L E T E D

FORM-I b

D E L E T E D

FORM – J

BIDDER'S QUERIES (TECHNICAL)

SL. NO.	BIDDING DOCUMENT		SUBJECT	BIDDER'S QUERY	OWNER'S REPLY
	PAGE NO.	CLAUSE NO.			

NOTE: Bidder's Queries may be sent by e-mail to ajdutta@bcplindia.co.in

FORM–K

BIDDER'S QUERIES (COMMERCIAL)

SL. NO.	BIDDING DOCUMENT		SUBJECT	BIDDER'S QUERY	OWNER'S REPLY
	PAGE NO.	CLAUSE NO.			

NOTE: Bidder's Queries may be sent by e-mail to ajdutta@bcplindia.co.in

FORM–L

DECLARATION BY THE BIDDER

We _____ (Name of the Bidder) hereby represent that we have gone through and understood the Bidding Document (which is in two Parts) in Commercial Part (including Price)) and Technical Part and that our Bid has been prepared accordingly in compliance with the requirement stipulated in the said documents.

We are submitting Master Index of Bidding Document as part of our Bid, duly signed and stamped on each page in token of our acceptance. We undertake that Commercial Part (including Price) and Technical Part of the Bidding Document shall be deemed to form part of our bid and in the event of award of work to us, the same shall be considered for constitution of Contract Agreement. Further, we shall sign and stamp each page of above Parts of Bidding Document as a token of Acceptance and as a part of the Contract in the event of award of Contract to us.

We further confirm that we have indicated prices in Schedule of Rates, considering detailed description of items given in Schedule of Rates (Detailed Description) including Summary of Price and submitted in Price Bid in separately sealed envelope. We confirm that price quoted by us includes price for all works/activities/supply etc. as mentioned in item description of the items in Schedule of Rates (with detailed item description) which has been issued to us or downloaded as per the Bidding Document.

SIGNATURE OF BIDDER : _____

NAME OF BIDDER : _____

COMPANY SEAL : _____

NOTE: This declaration should be signed by the Bidder's representative who is signing the Bid.

ADDITIONAL FORMATS

(COVERING LETTER ON LETTER HEAD)

To, Date:

Sub: Certificate regarding .....

Dear Sir,

We ..... (name of Statutory Auditor/Chartered Accountant) are the Statutory Auditor/Chartered Accountant of M/s..... (name of bidder).

We hereby confirm that we have issued following certificate:

1.
2
.
3
.

Thanking You,

(Signature)
Place Name of Authorised Signatory
Date - Membership no.:

EncL: As above

Note:

Bidder whose accounts are not audited by auditors as per Law/Jurisdiction, certification from a Chartered Accountant to be submitted.

(ON THE LETTERHEAD)

Format-A

FORMAT FOR CERTIFICATION FROM STATUTORY AUDITOR / CHARTERED ACCOUNTANT* (FOR OWNERSHIP / POSSESSION OF EQUIPMENT/ VEHICLES)

Certificate from the Statutory Auditor/ Chartered Accountant* regarding Ownership / Possession

Based on the books (**NOT APPLICABLE**) on authenticated by ..... at ..... (name of the Bidder) located at ..... (address) owns the title / possess (strike out whichever is not applicable) the equipment/ vehicles as per enclosed list.

Further, M/s ..... (Name of the Bidder) have been undertaking .....services/ operations (name of the services) since ..... (mention the number of years in operation).

Name of Audit Firm/:
Chartered Accountant Name:
Date:

[Signature of Authorized Signatory]
Designation:
Seal:
Membership no.

Note:

(i) List of Equipments owned by the bidder to be enclosed along with certificate must indicate capacity/make/ model etc. Further the list should also be signed by the Statutory Auditor/Chartered Accountant* who is issuing the above certificate.

(ii) List of Vehicles owned by the bidder to be enclosed along with certificate must indicate Registration number/make/model/ year etc. Further the list should also be signed by the Statutory Auditor / Chartered Accountant* who is issuing the above certificate.

(iii) *Bidder whose accounts are not audited by auditors as per law/jurisdiction, certification from a Chartered Accountant to be submitted.

FORMAT FOR CERTIFICATE FROM STATUTORY AUDITOR / CHARTERED ACCOUNTANT* (APPLICABLE FOR HIRING OF LEGAL OR SIMILAR CONSULTANTS)

i) **Format for ascertaining the Financial Capacity of the Consultant:**

S.N	Financial Year	Consultancy Revenue/ Turn over (specify currency and amount)
1.		
2.		
3.		

Certificate from the Statutory Auditor/ Chartered Accountant*

This is to certify that ..... (name of the Bidder) has Consultancy Revenue/ Turn over in the respective years as shown above .

Name of Audit Firm/: [Signature of Authorized Signatory] Chartered Accountant Nam

NOT APPLICABLE

Seal:

Membership no.

* Bidder whose accounts are not audited by auditors as per Law/Jurisdiction, certification from a Chartered Accountant to be submitted.

0 **Format for ascertaining the Experience Criteria of Consultant^:**

S.N	Name of Client	Name of Job/ Contract	Estimated Value of Contract (Specify currency & amount)	Payment of Consultancy Revenue received by the Applicant (Specify currency & amount) (If applicable)
(1)*	(2)	(3)	(4)	(5)
1				
2				
3				

Applicant should provide details of only those Consultancy Job that have been undertaken by it under its own name.

* The names and chronology of Consultancy Job included here should conform to the project-wise details.

Format-B
Page 2 of 2

Certificate from the Statutory Auditor/ Chartered Accountant*

This is to certify that the information contained in Column 5 above is correct as per the accounts of the Applicant and/ or the client.

Name of Audit Firm/:
Chartered Accountant
Date: Name:

[Signature of Authorized Signatory]

NOT APPLICABLE

Seal:
Membership no.

* Bidder whose accounts are not audited by auditors as per Law/Jurisdiction, certification from a Chartered Accountant to be submitted.

Format-C
Page 1 of2

FORMAT FOR CERTIFICATE FROM CHARTERED ACCOUNTANT FOR DETAILS OF SIMILAR SUPPLY OF GOODS/WORKS/ SERVICES IN PAST 7-YEARS

(Applicable for cases where bidder's account are not audited by Statutory Auditor as per Law / Jurisdiction)

Name of the Work	
Name, address and contact details of client	
P.O /W.O No.	
Scope of work of Bidder	
Date of commencement of the project/work	
Date of completion of the project/work	
Total executed value from the project/work (Specify currency and amount)	**NOT APPLICABLE**

(i) Copies of Letter of awards/ Order/ Work Orders and completion certificate (in case of works/ services) or IRN/Proof of delivery (in case of supplies, if applicable) to be enclosed.

(ii) The Supply/Work/Services completed earlier than 7 years need not be indicated here.

(iii) The list of Supply/Work/Services, not of similar nature need not be indicated here. Failing to comply aforementioned instructions may lead to rejection of bid.

Plac
e:
Date:

[Signature of Authorized Signatory of Bidder]
Name:
Designation:
Seal:

Format-C
Page 2 of2

FORMAT FOR CERTIFICATION BY CHARTERED ACCOUNTANT

Certificate from the Chartered Accountant regarding Supply of Good/ Works/ Services

Based on its books of accounts and other published information authenticated by it, {this is to certify that LOA/ PO/ WO No..... dated ..... was awarded to ..... *Bidder)* by ..... *(Name* ..... *(name of Supply/Work/ Service)*. The Supply/Works/Services commenced on ..... *(date)* and was/ is likely to be completed on ..... *(date, if any).* It is certified that the total value of contract/order executed by ..... *(name of bidder)* was ..... *(Specify Currency and amount)* and executed value was ..... *{Specify Currency and amount).*

NOT APPLICABLE

Name of Audit Firm/:
Chartered Accountant
Date: Name:

[Signature of Authorized Signatory]

Designation:
Seal:
Membership no.

Format- D
(Page 1 of 2)

FORMAT FOR CERTIFICATE FROM STATUTORY AUDITOR FOR DETAILS OF SIMILAR GOODS/ WORK/SERVICES SUPPLIED/ DONE DURING PAST 07 YEARS

(Applicable in all cases whe r's accounts are audited by Statutory Auditor)

NOT APPLICABLE

S. No	Description of the Goods/works/ Services	LOA/PO/WONo. and date	Full Post n *Name addr Officer-i othe*	& phone nt. *on and ineer/ for cases hase)*	Value of Contract/ Order (Specify Currency Amount)	Date of Commence-ment of Work/ Services or supply of goods	Scheduled Completion Time (Months) Delivery Schedule	Date of Actual Completion/ Supply	Reasons for delay in execution, if any
(1)	(2)	(3)			(6)	(7)	(8)	(9)	(10)
PI refer instruction									

Place:
Date: Name:

[Signature of Authorized Signatory of Bidder]
Designation:
Seal:

Instructions:

1. **Copies of Letter of awards/ Order/ Work Orders and completion certificate (in case of works/ services) or IRN/Proof of delivery (in case of supplies, if applicable) to be enclosed.**
2. **The Supply/Work/Services completed earlier than 07 years need not be indicated here.**
3. **The list of Supply/Work/Services; not of similar nature need not be indicated here. Failing to comply aforementioned instructions may lead to rejection of bid.**
4. **Bidders are expected to provide details in respect of each Order in this Annex. The orders cited must comply with the Bid Evaluation criteria specified in Tender Document. Details provided in this section is intended to serve as a backup for information provided in Offer/ Quotation. Bidder should also refer to the Instructions below.**
5. **A separate sheet should be filled for each LOA/Work Order/Purchase Order.**
6. **Certificate from the Bidder's statutory auditors must be furnished in the format below for LOA/ Work Order/ Purchase Order mentioned above (separately for each orders).**
7. **It may be noted that in the absence above certificates, the details would be considered inadequate and could lead to the bid being considered ineligible for further evaluation.**

Format- D
(Page 2 of 2)

Certificate from the Statutory Auditor regarding Supply of Good/ Works/ Services

Based on its books of accounts and other publish rmation authenticated by it, {this is to certify that LOA/ PO/ WO No..... .... dated ..... was awarded to ..... *(name Bidder)* **by** ..... *(Name of Client)* **to execute** ..... *(name of Supply/ Service).* **The Supply/works/services commenced on** .....*(date)* **and was/ is likely to be compl .....** *(date, if any).* **It is certified that the total value of contract/order executed by ....** *(name of bidder)* **was** ..... *(Specify Currency and amount)* **ecuted value was .....***(Specify Currency and amount).*

NOT APPLICABLE

Name of Audit Firm/:
Chartered Accountant
Date: Name:

[Signature of Authorized Signatory]

Designation
: Seal:
Membership no.

Annexure-Z

FORMAT FOR CHARTERED ACCOUNTANT CERTIFICATE FOR FINANCIAL CAPABILITY OF THE BIDDER

We have verified the Annual Accounts and other relevant records of M/s.....(Name of the bidder) and certify the following

A. ANNUAL TURNOVER OF LAST 3 YEARS

Year		Amount (Rupees)
Year 1		
Year 2		
Year 3		

B. FINANCIAL DATA FOR LAST AUDITED FINANCIAL YEAR :

Description	**Year**
	Amount (Rupees)
1. Current Assets	
2. Current Liabilities	
3. Working Capital (Current Assets-Current liabilities)	
4. Net Worth (Paid up share capital and Free Reserves & Surplus)	

Name of Audit Firm/: [Signature of Authorized Signatory]
Chartered Accountant Name: Date: Designation:
Seal:
Membership no.

Instructions:

1. The financial year would be the same as one normally followed by the bidder for its Annual Report.
2. The bidder shall provide the audited annual financial statements as required for this Tender document. Failure to do so would result in the Proposal being considered as non responsive.
3. For the purpose of this Tender document, (i) Annual Turnover shall be "Sale value/ Operating Income" (ii) Working Capital shall be "Current Assets less Current liabilities" and (iii) Net Worth shall be "Paid up share capital and Free Reserves & Surplus"
4. * Bidder whose accounts are not audited by auditors as per law/jurisdiction, certification from a Chartered Accountant to be submitted.

GENERAL CONDITIONS OF CONTRACT

SECTION- I DEFINITIONS

1. Definition of Terms:

1.1 In this CONTRACT (as here-in-after defined) the following words and expressions shall have the meanings hereby assigned to them except where the context otherwise required.

1.1.1 The EMPLOYER/COMPANY/GAIL means GAIL (INDIA) LTD., a public limited company, incorporated under the Company's act 1956 and having its Registered office at 16, Bhikaji Cama Place, New Delhi 110066 and includes its successors and assigns.

1.1.2 The "CONTRACTOR" means the person or the persons, firm or Company or corporation whose tender has been accepted by the EMPLOYER and includes the CONTRACTOR's legal Representatives his successors and permitted assigns.

1.1.3 The ENGINEER/ENGINEER-IN-CHARGE" shall mean the person designated from time to time by the GAIL and shall include those who are expressly authorized by him to act for and on his behalf for operation of this CONTRACT.

1.1.4 The "WORK" shall mean and include all items and things to be supplied/ done and services and activities to be performed by the CONTRACTOR in pursuant to and in accordance with CONTRACT or part thereof as the case may be and shall include all extra, additional, altered or substituted works as required for purpose of the CONTRACT.

1.1.5 The "PERMANENT WORK" means and includes works which will be incorporated in and form a part of the work to be handed over to the EMPLOYER by the CONTRACTOR on completion of the CONTRACT.

1.1.6 "CONSTRUCTION EQUIPMENT" means all appliances/equipment and things whatsoever nature for the use in or for the execution, completion, operation, or maintenance of the work or temporary works (as hereinafter defined) but does not include materials or other things intended to form or to be incorporated into the WORK, or camping facilities.

1.1.7 "CONTRACT DOCUMENTS" means collectively the Tender Documents, Designs, Drawings, Specification, Schedule of Quantities and Rates, Letter of Acceptance and agreed variations if any, and such other documents constituting the tender and acceptance thereof.

1.1.8 CONSULTANT: means ---------- who are the consulting engineer to the Employer for this project and having registered office at ----------

1.1.9 The "SUB-CONTRACTOR" means any person or firm or Company (other than the CONTRACTOR) to whom any part of the work has been entrusted by the CONTRACTOR, with the written consent of the ENGINEER-IN-CHARGE, and the legal representatives, successors and permitted assigns of such person, firm or company.

1.1.10 The "CONTRACT" shall mean the Agreement between the EMPLOYER and the CONTRACTOR for the execution of the works including therein all contract documents.

1.1.11 The "SPECIFICATION" shall mean all directions the various technical specifications, provisions attached and referred to the Tender Documents which pertain to the method and manner of performing the work or works to the quantities and qualities of the work or works and the materials to be furnished under the CONTRACT for the work or works, as may be amplified or modified by the GAIL or ENGINEER-IN-CHARGE during the performance of CONTRACT in order to provide the unforseen conditions or in the best interests of the work or works. It shall also include the latest edition of relevant Standard Specifications including all addenda/corrigenda published before entering into CONTRACT.

1.1.12 The "DRAWINGS" shall include maps, plans and tracings or prints or sketches thereof with any modifications approved in writing by the ENGINEER- IN-CHARGE and such other drawing as may, from time to time, be furnished or approved in writing by the ENGINEER-IN-CHARGE.

1.1.13 The "TENDER" means the proposal along with supporting documents submitted by the CONTRACTOR for consideration by the EMPLOYER.

1.1.14 The "CHANGE ORDER" means an order given in writing by the ENGINEER-IN-CHARGE to effect additions to or deletion from and alteration in the works.

1.1.15 The "COMPLETION CERTIFICATE" shall mean the certificate to be issued by the ENGINEER-IN-CHARGE when the works have been completed entirely in accordance with CONTRACT DOCUMENT to his satisfaction.

1.1.16 The "FINAL CERTIFICATE" in relation to a work means the certificate regarding the satisfactory compliance of various provision of the CONTRACT by the CONTRACTOR issued by the ENGINEER-IN- CHARGE/EMPLOYER after the period of liability is over.

1.1.17 "DEFECT LIABILITY PERIOD" in relation to a work means the specified period from the date of COMPLETION CERTIFICATE upto the date of issue of FINAL CERTIFICATE during which the CONTRACTOR stands responsible for rectifying all defects that may appear in the works executed by the CONTRACTOR in pursuance of the CONTRACT and includes warranties against Manufacturing/Fabrication/ Erection/Construction defects covering all materials plants, equipment, components, and the like supplied by the CONTRACTOR, works executed against workmanship defects.

1.1.18 The "APPOINTING AUTHORITY" for the purpose of arbitration shall be the CHAIRMAN and MANAGING DIRECTOR or any other person so designated by the EMPLOYER.

1.1.19 "TEMPORARY WORKS" shall mean all temporary works of every kind required in or about the execution, completion or maintenance of works.

1.1.20 "PLANS" shall mean all maps, sketches and layouts as are incorporated in the CONTRACT in order to define broadly the scope and specifications of the work or works, and all reproductions thereof.

1.1.21 "SITE" shall mean the lands and other places on, under, in or through which the permanent works are to be carried out and any other lands or places provided by the EMPLOYER for the purpose of the CONTRACT.

1.1.22 "NOTICE IN WRITING OR WRITTEN NOTICE" shall mean a notice in written, typed or printed characters sent (unless delivered personally or otherwise proved to have been received by the addressee) by registered post to the latest known private or business address or registered office of the addressee and shall be deemed to have been received in the ordinary course of post it would have been delivered.

1.1.23 "APPROVED" shall mean approved in writing including subsequent written confirmation of previous verbal approval and "APPROVAL" means approval in writing including as aforesaid.

1.1.24 "LETTER OF INTENT/FAX OF INTENT" shall mean intimation by a Fax/Letter to Tenderer(s) that the tender has been accepted in accordance with the provisions contained in the letter.

1.1.25 "DAY" means a day of 24 hours from midnight to midnight irrespective of the number of hours worked in that day.

1.1.26 "WORKING DAY" means any day which is not declared to be holiday or rest day by the EMPLOYER.

1.1.27 "WEEK" means a period of any consecutive seven days.

1.1.28 "METRIC SYSTEM" - All technical documents regarding the construction of works are given in the metric system and all work in the project should be carried out according to the metric system. All documents concerning the work shall also be maintained in the metric system.

1.1.29 "VALUE OF CONTRACT" or "TOTAL CONTRACT PRICE" shall mean the sum accepted or the sum calculated in accordance with the prices accepted in tender and/or the CONTRACT rates as payable to the CONTRACTOR for the entire execution and full completion of the work, including change order.

1.1.30 "LANGUAGE FOR DRAWINGS AND INSTRUCTION" All the drawings, titles, notes, instruction, dimensions, etc. shall be in English Language.

1.1.31 "MOBILIZATION" shall mean establishment of sufficiently adequate infrastructure by the CONTRACTOR at "SITE" comprising of construction equipments, aids, tools tackles including setting of site offices with facilities such as power, water, communication etc. establishing manpower organisation comprising of Resident Engineers, Supervising personnel and an adequate strength of skilled, semi-skilled and un-skilled workers, who with the so established infrastructure shall be in a position to

commence execution of work at site(s), in accordance with the agreed Time Schedule of Completion of Work. "MOBILISATION" shall be considered to have been achieved, if the CONTRACTOR is able to establish infrastructure as per Time Schedule, where so warranted in accordance with agreed schedule of work implementation to the satisfaction of ENGINEER-IN-CHARGE/ EMPLOYER.

1.1.32 "COMMISSIONING" shall mean pressing into service of the system including the plant(s), equipment(s), vessel(s), pipeline, machinery(ies), or any other section or sub-section of installation(s) pertaining to the work of the CONTRACTOR after successful testing and trial runs of the same.

"COMMISSIONING" can be either for a completed system or a part of system of a combination of systems or sub-systems and can be performed in any sequence as desired by EMPLOYER and in a manner established to be made suited according to availability of pre-requisites. Any such readjustments made by EMPLOYER in performance of "COMMISSIONING" activity will not be construed to be violating CONTRACT provisions and CONTRACTOR shall be deemed to have provided for the same.

SECTION-II GENERAL INFORMATION

2. General Information

2.1 a) Location of Site: The proposed location of Project site is defined in the Special Conditions of Contract.

b) Access by Road: CONTRACTOR, if necessary, shall build other temporary access roads to the actual site of construction for his own work at his own cost. The CONTRACTOR shall be required to permit the use of the roads so constructed by him for vehicles of any other parties who may be engaged on the project site. The CONTRACTOR shall also facilitate the construction of the permanent roads should the construction there of start while he is engaged on this work. He shall make allowance in his tender for any inconvenience he anticipates on such account.

Non-availability of access roads, railway siding and railway wagons for the use of the CONTRACTOR shall in no case condone any delay in the execution of WORK nor be the cause for any claim for compensation against the EMPLOYER.

2.2 Scope of Work: The scope of WORK is defined in the Technical Part of the tender document. The CONTRACTOR shall provide all necessary materials, equipment, labour etc. for the execution and maintenance of the WORK till completion unless otherwise mentioned in the Tender Document.

2.3 Water Supply: Contractor will have to make his own arrangements for supply of water to his labour camps and for works. All pumping installations, pipe net work and distribution system will have to be carried out by the Contractor at his own risk and cost.

Alternatively the Employer at his discretion may endeavour to provide water to the Contractor at the Employer's source of supply

provided the Contractor makes his own arrangement for the water meter which shall be in custody of the Employer and other pipe net works from source of supply and such distribution pipe network shall have prior approval of the Engineer-in-Charge so as not to interfere with the layout and progress of the other construction works. In such case, the rate for water shall be deducted from the running account bills.

However, the Employer does not guarantee the supply of water and this does not relieve the Contractor of his responsibility in making his own arrangement and for the timely completion of the various works as stipulated.

2.4 Power Supply:

2.4.1 Subject to availability, EMPLOYER will supply power at 400/440 V at only one point at the nearest sub-station, from where the CONTRACTOR will make his own arrangement for temporary distribution. The point of supply will not be more than 500 m away from the CONTRACTOR'S premises. All the works will be done as per the applicable regulations and passed by the ENGINEER-IN-CHARGE. The temporary line will be removed forthwith after the completion of work or if there is any hindrance caused to the other works due to the alignment of these lines, the CONTRACTOR will re-route or remove the temporary lines at his own cost. The CONTRACTOR at his cost will also provide suitable electric meters, fuses, switches, etc. for purposes of payment to the EMPLOYER which should be in the custody and control of the EMPLOYER. The cost of power supply shall be payable to the EMPLOYER every month for Construction Works power which would be deducted from the running account bills. The EMPLOYER shall not, however, guarantee the supply of electricity nor have any liability in respect thereof. No claim for compensation for any failure or short supply of electricity will be admissible.

2.4.2 It shall be the responsibility of the CONTRACTOR to provide and maintain the complete installation on the load side of the supply with due regard to safety requirement at site. All cabling, equipment, installations etc. shall comply in all respects with the latest statutory requirements and safety provisions i.e., as per the Central/State Electricity Acts and Rules etc. The CONTRACTOR will ensure that his equipment and Electrical Wiring etc., are installed, modified, maintained by a licensed Electrician/Supervisor. A test certificate is to be produced to the ENGINEER-IN-CHARGE for his approval, before power is made available.

2.4.3 At all times, IEA regulations shall be followed failing which the EMPLOYER has a right to disconnect the power supply without any reference to the CONTRACTOR. No claim shall be entertained for such disconnection by the ENGINEER-IN-CHARGE. Power supply will be reconnected only after production of fresh certificate from authorized electrical supervisors.

2.4.4 The EMPLOYER is not liable for any loss or damage to the CONTRACTOR's equipment as a result of variation in voltage or frequency or interruption in power supply or other loss to the CONTRACTOR arising therefrom.

2.4.5 The CONTRACTOR shall ensure that the Electrical equipment installed by him are such that average power factors does not fall below 0.90 at his premises. In case power factor falls below 0.90 in any month, he will reimburse to the EMPLOYER at the penal rate determined by the EMPLOYER for all units consumed during the month.

2.4.6 The power supply required for CONTRACTOR's colony near the plant site will be determined by the EMPLOYER and shall be as per State Electricity Board's Rules and other statutory provisions applicable for such installations from time to time. In case of power supply to CONTRACTOR's colony, the power will be made available at a single point and the CONTRACTOR shall make his own arrangement at his own cost for distribution to the occupants of the colony as per Electricity Rules and Acts. The site and colony shall be sufficiently illuminated to avoid accidents.

2.4.7 The CONTRACTOR will have to provide and install his own lights and power meters which will be governed as per Central/State Government Electricity Rules. The metres shall be sealed by the EMPLOYER.

2.4.8 In case of damage of any of the EMPLOYER's equipment on account of fault, intentional or unintentional on the part of the CONTRACTOR, the EMPLOYER reserves the right to recover the cost of such damage from the CONTRACTOR's bill. Cost of HRC Fuses replaced at the EMPLOYER's terminals due to any fault in the CONTRACTOR's installation shall be to CONTRACTOR's account at the rates decided by the ENGINEER-IN-CHARGE.

2.4.9 Only motors upto 3 HP will be allowed to be started direct on line. For motors above 3 HP and upto 100 HP a suitable Starting device approved by the ENGINEER- IN-CHARGE shall be provided by the CONTRACTOR. For motors above 100 HP slipring induction motors with suitable starting devices as approved by the ENGINEER- IN-CHARGE shall be provided by the CONTRACTOR.

2.4.10 The CONTRACTOR shall ensure at his cost that all electrical lines and equipment and all installations are approved by the State Electricity Inspector before power can be supplied to the EMPLOYER.

2.4.11 The total requirement of power shall be indicated by the tenderer alongwith his tender.

2.5 Land for Contractor's Field Office, Godown and Workshop: The EMPLOYER will, at his own discretion and convenience and for the duration of the execution of the work make available near the site, land for construction of CONTRACTOR's Temporary Field Office, godowns workshops and assembly yard required for the execution of the CONTRACT. The CONTRACTOR shall at his own cost construct all these temporary buildings and provide suitable water supply and sanitary arrangement and get the same approved by the ENGINEER-IN-CHARGE.

On completion of the works undertaken by the CONTRACTOR, he shall remove all temporary works erected by him and have the SITE cleaned as directed by ENGINEER-IN-CHARGE. If the

CONTRACTOR shall fail to comply with these requirements, the ENGINEER-IN-CHARGE may at he expenses of the CONTRACTOR remove such surplus, and rubbish materials and dispose off the same as he deems fit and get the site cleared as aforesaid; and CONTRACTOR shall forthwith pay the amount of all expenses so incurred and shall have no claim in respect of any such surplus materials disposed off as aforesaid. But the EMPLOYER reserves the right to ask the CONTRACTOR any time during the pendency of the CONTRACT to vacate the land by giving 7 days notice on security reasons or on national interest or otherwise. Rent may be charged for the land so occupied from contractor by the Employer.

The CONTRACTOR shall put up temporary structures as required by them for their office, fabrication shop and construction stores only in the area allocated to them on the project site by the EMPLOYER or his authorised representative. No tea stalls/canteens should be put up or allowed to be put up by any CONTRACTOR in the allotted land or complex area without written permission of the EMPLOYER.

No unauthorised buildings, constructions or structures should be put up by the CONTRACTOR anywhere on the project site.

For uninterrupted fabrication work, the CONTRACTOR shall put up temporary covered structures at his cost within Area in the location allocated to them in the project site by the EMPLOYER or his authorised representative.

No person except for authorised watchman shall be allowed to stay in the plant area/CONTRACTOR's area after completion of the day's job without prior written permission from ENGINEER-IN-CHARGE.

2.6 Land for Residential Accommodation:-:No Land shall be made available for residential accommodation for staff and labour of CONTRACTOR.

SECTION-III GENERAL INSTRUCTIONS TO TENDERERS

3. Submission of Tender:

3.1 TENDER must be submitted without making any additions, alterations, and as per details given in other clauses hereunder. The requisite details shall be filled in by the TENDERER at space provided under “Submission of Tender at the beginning of GCC of Tender Document. The rate shall be filled only in the schedule given in this Tender Document.

3.2 Addenda/Corrigenda to this Tender Document, if issued, must be signed, submitted alongwith the Tender Document. the tenderer should write clearly the revised quantities in Schedule of Rates of Tender Document and should price the WORK based on revised quantities when amendments of quantities are issued in addenda.

3.3 Covering letter alongwith its enclosures accompanying the Tender Document and all further correspondence shall be submitted in duplicate.

3.4 Tenderers are advised to submit quotations based strictly on the terms and conditions and specifications contained in the Tender Documents and not to stipulate any deviations.

3.5 Tenders should always be placed in double sealed covers, superscribing ["QUOTATION DO NOT OPEN" Tender for _____ Project of GAIL (India) Limited due for opening on _____]. The *Full Name, Address and Telegraphic Address, Fax No. of the Tenderers* shall be written on the bottom left hand corner of the sealed cover.

4. Documents:

4.1 General:

The tenders as submitted, will consist of the following:

i) Complete set of Tender Documents (Original) as sold duly filled in and signed by the tenderer as prescribed in different clauses of the Tender Documents.

ii) Earnest money in the manner specified in Clause 6 hereof.

iii) Power of Attorney or a true copy thereof duly attested by a Gazetted Officer in case an authorised representative has signed the tender, as required by Clause 14 hereof.

iv) Information regarding tenderers in the proforma enclosed.

v) Details of work of similar type and magnitude carried out by the Tenderer in the proforma provided in the tender document.

vi) Organisation chart giving details of field management at site, the tenderer proposes to have for this job.

vii) Details of construction plant and equipments available with the tenderer for using in this work.

viii) Solvency Certificate from Scheduled Bank to prove the financial ability to carry out the work tendered for.

ix) Latest Balance Sheet and Profit & Loss Account duly audited.

x) Details of present commitment as per proforma enclosed to tender.

xi) Data required regarding SUB-CONTRACTOR(s)/ Supplier/ Manufacturers and other technical informations the tenderer wish to furnish.

xii) Provident fund registration certificate

xiii) List showing all enclosures to tender.

4.2 All pages are to be Initiated: All signatures in Tender Documents shall be dated, as well as, all the pages of all sections of Tender Documents shall be initialed at the lower right hand corner and signed wherever required in the tender papers by the TENDERER

or by a person holding power of attorney authorising him to sign on behalf of the tenderer before submission of tender.

4.3 Rates to be in Figures and Words: The tender should quote in English both in figures as well as in words the rates and amounts tendered by him in the Schedule of Rates of Tender submitted by the CONTRACTOR for each item and in such a way that interpolation is not possible. The amount for each item should be worked out and entered and requisite total given of all items, both in figures and in words. The tendered amount for the work shall be entered in the tender and duly signed by the Tenderer.

If some discrepancies are found between the RATES in FIGURES and WORDS or the AMOUNT shown in the tender, the following procedure shall be followed:

a) When there is difference between the rates in figures and words, the rate which corresponds to the amount worked out by the tenderer shall be taken as correct.

b) When the rate quoted by the tenderer in figures and words tally but the amount is incorrect the rate quoted by the tenderer shall be taken as correct.

c) When it is not possible to ascertain the correct rate by either of above methods, the rate quoted in words shall be taken as correct.

4.4 Corrections and Erasures: All correction(s) and alteration(s) in the entries of tender paper shall be signed in full by the TENDERER with date. No erasure or over writing is permissible.

4.5 Signature of Tenderer:

4.5.1 The TENDERER shall contain the name, residence and place of business of person or persons making the tender and shall be signed by the TENDERER with his usual signature. Partnership firms shall furnish the full names of all partners in the tender. It should be signed in the partnership's name by all the partners or by duly authorised representatives followed by the name and designation of the person signing. Tender by a corporation shall be signed by an authorised representative, and a Power of Attorney in that behalf shall accompany the tender. A copy of the constitution of the firm with names of all partners shall be furnished.

4.5.2 When a tenderer signs a tender in a language other than English, the total amount tendered should, in addition, be written in the same language. The signature should be attested by at least one witness.

4.6 Witness: Witness and sureties shall be persons of status and property and their names, occupation and address shall be stated below their signature.

4.7 Details of Experience: The tenderer should furnish, alongwith his tender, details of previous experience in having successfully completed in the recent past works of this nature, together with the names of Employers, location of sites and value of contract, date

of commencement and completion of work, delays if any, reasons of delay and other details alongwith documentary evidence(s).

4.8 Liability of Government of India: It is expressly understood and agreed by and between Bidder or/Contractor and M/s GAIL (India) Limited, and that M/s GAIL (India) Ltd., is entering into this agreement solely on its own behalf and not on behalf of any other person or entity. In particular, it is expressly understood and agreed that the Government of India is not a party to this agreement and has no liabilities, obligations or rights hereunder. It is expressly understood and agreed that M/s GAIL (India) Ltd. is an independent legal entity with power and authority to enter into contracts solely on its own behalf under the applicable Laws of India and general principles of Contract Law. The Bidder/Contractor expressly agrees, acknowledges and understands that M/s GAIL (India) Ltd. is not an agent, representative or delegate of the Government of India. It is further understood and agreed that the Government of India is not and shall not be liable for any acts, omissions, commissions, breaches or other wrongs arising out of the contract. Accordingly, Bidder/Contractor hereby expressly waives, releases and foregoes any and all actions or claims, including cross claims, impleader claims or counter claims against the Government of India arising out of this contract and covenants not to sue to Government of India as to any manner, claim, cause of action or thing whatsoever arising of or under this agreement.

5. Transfer of Tender Documents:

5.1 Transfer of Tender Documents purchased by one intending tenderer to another is not permissible.

6. Earnest Money:

6.1 The bidder must pay Earnest Money as given in the letter /notice inviting tenders and attach the official receipt with the tender failing which the tender is liable to be rejected and representatives of such tenderers will not be allowed to attend the tender opening. Earnest Money can be paid in Demand Drafts or Bank Guarantee or Banker's Cheque or Letter of Credit from any Indian scheduled bank or a branch of an International bank situated in India and registered with Reserve Bank of India as scheduled foreign bank. However, other than the Nationalised Indian Banks, the banks whose BGs are furnished, must be commercial banks having net worth in excess of Rs. 100 crores and a declaration to this effect should be made by such commercial bank either in the bank guarantee itself or separately on a letter head.

The bid guarantee shall be submitted in the prescribed format .

Note: The Bank Guarantee so furnished by the tenderer shall be in the proforma prescribed by the EMPLOYER. No interest shall be paid by the EMPLOYER on the Earnest Money deposited by the tenderer. The Bank Guarantee furnished in lieu of Earnest Money shall be kept valid for a period of "SIX MONTHS" from the date of opening of tender.(TWO MONTHS beyond the bid validity).

The Earnest Money deposited by successful tenderer shall be forfeited if the Contractor fails to furnish the requisite Contract Performance Security as per clause 24 hereof and /or fails to start work within a period of 15 days or fails to execute the AGREEMENT within 15 days of the receipt by him of the Notification of Acceptance of Tender.

Note: The Earnest Money of the unsuccessful bidder will be returned by EMPLOYER/CONSULTANT, directly to the tenderer (s), within a reasonable period of time but not later than 30 days after the expiration of the period of bid validity prescribed by EMPLOYER.

7 Validity:

7.1 Tender submitted by tenderers shall remain valid for acceptance for a period of "4 MONTHS" from the date of opening of the tender. The tenderers shall not be entitled during the said period of 4 months, without the consent in writing of the EMPLOYER, to revoke or cancel his tender or to vary the tender given or any term thereof. In case of tender revoking or canceling his tender or varying any term in regard thereof without the consent of EMPLOYER in writing, the EMPLOYER shall forfeit Earnest Money paid by him alongwith tender.

8 Addenda/Corrigenda

8.1 Addenda/ Corrigenda to the Tender Documents will be issued in duplicate prior to the date of opening of the tenders to clarify documents or to reflect modification in design or CONTRACT terms.

8.2 Each addenda/ corrigendum issued will be issued in duplicate to each person or organisation to whom set of Tender Documents has been issued. Recipient will retain tenderer's copy of each Addendum/Corrigendum and attach original copy duly signed along with his offer. All Addenda/Corrigenda issued shall become part of Tender Documents.

9 Right of Employer to Accept or Reject Tender:

9.1 The right to accept the tender will rest with the EMPLOYER. The EMPLOYER, however, does not bind himself to accept the lowest tender, and reserves to itself the authority to reject any or all the tenders received without assigning any reason whatsoever. At the option of the Employer, the work for which the tender had been invited, may be awarded to one Contractor or split between more than one bidders, in which case the award will be made for only that part of the work, in respect of which the bid has been accepted. The quoted rates should hold good for such eventualities.

Tenders in which any of the particulars and prescribed information are missing or are incomplete in any respect and/or the prescribed conditions are not fulfilled are liable to be rejected. The Tender containing uncalled for remarks or any additional conditions are liable to be rejected.

Canvassing in connection with tenders is strictly prohibited and tenders submitted by the Tenderers who resort to canvassing will be liable to rejection.

10 Time Schedule

10.1 The WORK shall be executed strictly as per the TIME SCHEDULE specified in TENDER/CONTRACT Document. The period of construction given in Time Schedule includes the time required for mobilisation as well as testing, rectifications if any, retesting and completion in all respects to the entire satisfaction of the ENGINEER-IN- CHARGE.

10.2 A joint programme of execution of the WORK will be prepared by the ENGINEER-IN-CHARGE and CONTRACTOR based on priority requirement of this project. This programme will take into account the time of completion mentioned in 10.1 above and the time allowed for the priority works by the ENGINEER-IN-CHARGE.

10.3 Monthly/Weekly construction programme will; be drawn up by the ENGINEER-IN-CHARGE jointly with the CONTRACTOR, based on availability of work fronts and the joint construction programme as per 10.2 above. The CONTRACTOR shall scrupulously adhere to these targets /programmes by deploying adequate personnel, construction tools and tackles and he shall also supply himself all materials of his scope of supply in good time to achieve the targets/programmes. In all matters concerning the extent of targets set out in the weekly and monthly programmes and the degree of achievements the decision of the ENGINEER-IN-CHARGE will be final and binding on the CONTRACTOR.

11 Tenderer's Responsibility

11.1 The intending tenderers shall be deemed to have visited the SITE and familiarised submitting the tender. Non-familiarity with the site conditions will not be considered a reason either for extra claims or for not carrying out the works in strict conformity with the DRAWINGS and SPECIFICATIONS or for any delay in performance.

12 Retired Government or Company Officers

12.1 No Engineer of Gazetted rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the States/ Central Government or of the EMPLOYER is allowed to work as a CONTRACTOR for a period of two years after his retirement from Government Service, or from the employment of the EMPLOYER without the previous permission of the EMPLOYER. The CONTRACT, if awarded, is liable to be cancelled if either the CONTRACTOR or any of his employees is found at any time to be such a person, who has not obtained the permission of the State/Central Government or of the EMPLOYER as aforesaid before submission of tender, or engagement in the CONTRACTOR'S service as the case may be.

13 Signing of the Contract:

13.1 The successful tenderer shall be required to execute an AGREEMENT in the proforma attached with TENDER DOCUMENT within 15 days of the receipt by him of the Notification of Acceptance of Tender. In the event of failure on the part of the successful tenderer to sign the AGREEMENT within the above stipulated period, the Earnest Money or his initial deposit will be forefeited and the acceptance of the tender shall be considered as cancelled.

14 Field Management & Controlling/Coordinating Authority:

14.1 The field management will be the responsibility of the ENGINEER-IN-CHARGE, who will be nominated by the EMPLOYER. The ENGINEER-IN-CHARGE may also authorise his representatives to assist in performing his duties and functions.

14.2 The ENGINEER-IN-CHARGE shall coordinate the works of various agencies engaged at site to ensure minimum disruption of work carried out by different agencies. It shall be the responsibility of the CONTRACTOR to plan and execute the work strictly in accordance with site instructions to avoid hindrance to the work being executed by other agencies.

15 Note to Schedule of Rates:

15.1 The Schedule of Rates should be read in conjunction with all the other sections of the tender.

15.2 The tenderer shall be deemed to have studied the DRAWINGS, SPECIFICATIONS and details of work to be done within TIME SCHEDULE and to have aquainted himself of the condition prevailing at site.

15.3 Rates must be filled in the Schedule of Rates of original Tender Documents. If quoted in separate typed sheets no variation in item description or specification shall be accepted. Any exceptions taken by the tenderer to the Schedule of Rates shall be brought out in the terms and conditions of the offer.

15.4 The quantities shown against the various items are only approximate. Any increase or decrease in the quantities shall not form the basis of alteration of the rates quoted and accepted.

15.5 The EMPLOYER reserves the right to interpolate the rates for such items of work falling between similar items of lower and higher magnitude.

16 Policy for Tenders Under Consideration:

16.1 Only Those Tenders which are complete in all respects and are strictly in accordance with the Terms and Conditions and Technical Specifications of Tender Document, shall be considered for evaluation. Such Tenders shall be deemed to be under consideration immediately after opening of Tender and until such time an official intimation of acceptance /rejection of Tender is made by GAIL to the Bidder.

16.2 Zero Deviation: Bidders to note that this is a ZERO DEVIATION TENDER. GAIL will appreciate submission of offer based on the terms and conditions in the enclosed General Conditions of Contract (GCC), Special Conditions of Contract (SCC), Instructions to Bidders (ITB), Scope of Work, technical specifications etc. to avoid wastage of time and money in seeking clarifications on technical/ commercial aspects of the offer. Bidder may note that no technical and commercial clarifications will be sought for after the receipt of the bids. In case of any deviation/nonconformity observed in the bid, it will be liable for rejection.

17 Award of Contract:

17.1 The Acceptance of Tender will be intimated to the successful Tenderer by GAIL either by Telex/ Telegram/ Fax or by Letter or like means-defined as LETTER OF ACCEPTANCE OF TENDER.

17.2 GAIL will be the sole judge in the matter of award of CONTRACT and the decision of GAIL shall be final and binding.

18 Clarification of Tender Document:

18.1 The Tender is required to carefully examine the Technical Specifications, Conditions of Contract, Drawings and other details relating to WORK and given in Tender Document and fully inform himself as to all conditions and matters which may in any way affect the WORK or the cost thereof. In case the Tenderer is in doubt about the completeness or correctness of any of the contents of the Tender Documents he should request in writing for an interpretation/clarification to GAIL in triplicate. GAIL will then

issue interpretation/clarification to Tenderer in writing. Such clarifications and or interpretations shall form part of the Specifications and Documents and shall accompany the tender which shall be submitted by tenderer within time and date as specified in invitations to tender.

18.2 Verbal clarification and information given by GAIL or its employee(s) or its representatives shall not in any way be binding on GAIL.

19 Local Conditions:

19.1 It will be imperative on each tenderer to inform himself of all local conditions and factors which may have any effect on the execution of WORK covered under the Tender Document. In their own interest, the tenderer are requested to familiarise themselves with the Indian Income Tax Act 1961, Indian Companies Act 1956, Indian Customs Act 1962 and other related Acts and Laws and Regulations of India with their latest amendments, as applicable GAIL shall not entertain any requests for clarifications from the tenderer regarding such local conditions.

19.2 It must be understood and agreed that such factors have properly been investigated and considered while submitting the tender. No claim for financial or any other adjustments to VALUE OF CONTRACT, on lack of clarity of such factors shall be entertained.

20 Abnormal Rates:

20.1 The tenderer is expected to quote rate for each item after careful analysis of cost involved for the performance of the completed item considering all specifications and Conditions of Contract. This will avoid loss of profit or gain in case of curtailment or change of specification for any item. In case it is noticed that the rates quoted by the tenderer for any item are unusually high or unusually low, it will be sufficient cause for the rejection of the tender unless the EMPLOYER is convinced about the reasonableness after scrutiny of the analysis for such rate(s) to be furnished by the tenderer (on demand).

SECTION-IV GENERAL OBLIGATIONS

21 Priority of Contract Documents

21.1 Except if and the extent otherwise provided by the Contract, the provisions of the General Conditions of Contract and Special Conditions shall prevail over those of any other documents forming part of the CONTRACT. Several documents forming the CONTRACT are to be taken as mutually explanatory of one another, but in case of ambiguities or discrepancies the same shall be explained and adjusted by the ENGINEER-IN-CHARGE who shall thereupon issue to the Contractor instructions thereon and in such event, unless otherwise provided in the Contract, the priority of the documents forming the Contract shall be as follows :

1) The Contract Agreement ;
2) The Letter of Acceptance;
3) The (Instructions to Bidders)ITB;
4) Special Conditions of Contract (SCC);
5) General Conditions of Contract (GCC)
6) Any other document forming part of the Contract.

Works shown in the DRAWING but not mentioned in the SPECIFICATIONS OR described in the SPECIFICATIONS without being shown in the DRAWINGS shall nevertheless be deemed to be included in the same manner as if they had been specifically shown upon the DRAWINGS and described in the SPECIFICATIONS.

21.2 Headings and Marginal Notes: All headings and marginal notes to the clauses of these General Conditions of Contract or to the SPECIFICATIONS or to any other Tender Document are solely for the purpose of giving a concise indication and not a summary of the contents thereof, and they shall never be deemed to be part thereof or be used in the interpretation or construction thereof the CONTRACT.

21.3 Singular and Plural: In CONTRACT DOCUMENTS unless otherwise stated specifically, the singular shall include the plural and vice versa wherever the context so requires.

21.4 Interpretation: Words implying `Persons' shall include relevant `Corporate Companies / Registered Associations/ Body of Individuals/ Firm of Partnership' as the case may be.

22 Special Conditions of Contract:

22.1 Special Conditions of Contract shall be read in conjunction with the General Conditions of Contract, specification of Work, Drawings and any other documents forming part of this CONTRACT wherever the context so requires.

22.2 Notwithstanding the sub-division of the documents into these separate sections and volumes every part of each shall be deemed to be supplementary to and complementary of every other part and shall be read with and into the CONTRACT so far as it may be practicable to do so.

22.3 Where any portion of the General Condition of Contract is repugnant to or at variance with any provisions of the Special Conditions of Contract, unless a different intention appears the provisions of the Special Conditions of Contract shall be deemed to over-ride the provisions of the General Conditions of Contract and shall to the extent of such repugnancy, or variations, prevail.

22.4 Wherever it is mentioned in the specifications that the CONTRACTOR shall perform certain WORK or provide certain facilities, it is understood that the CONTRACTOR shall do so at his cost and the VALUE OF CONTRACT shall be deemed to have included cost of such performance and provisions, so mentioned.

22.5 The materials, design and workmanship shall satisfy the relevant INDIAN STANDARDS, the JOB SPECIFICATIONS contained herein and CODES referred to. Where the job specification stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied.

23 Contractor to obtain his own Information:

23.1 The CONTRACTOR in fixing his rate shall for all purpose whatsoever reason may be, deemed to have himself independently obtained all necessary information for the purpose of preparing his tender and his tender as accepted shall be deemed to have taken into account all contingencies as may arise

due to such information or lack of same. The correctness of the details, given in the Tender Document to help the CONTRACTOR to make up the tender is not guaranteed.

The CONTRACTOR shall be deemed to have examined the CONTRACT DOCUMENTS, to have generally obtained his own information in all matters whatsoever that might affect the carrying out of the works at the schedules rates and to have satisfied himself to the sufficiency of his tender. Any error in description of quantity or omission therefrom shall not vitiate the CONTRACT or release the CONTRACTOR from executing the work comprised in the CONTRACT according to DRAWINGS and SPECIFICATIONS at the scheduled rates. He is deemed to have known the scope, nature and magnitude of the WORKS and the requirements of materials and labour involved etc., and as to what all works he has to complete in accordance with the CONTRACT documents whatever be the defects, omissions or errors that may be found in the DOCUMENTS. The CONTRACTOR shall be deemed to have visited surroundings, to have satisfied himself to the nature of all existing structures, if any, and also as to the nature and the conditions of the Railways, Roads, Bridges and Culverts, means of transport and communication, whether by land, water or air, and as to possible interruptions thereto and the access and egress from the site, to have made enquiries, examined and satisfied himself as to the sites for obtaining sand, stones, bricks and other materials, the sites for disposal of surplus materials, the available accommodation as to whatever required, depots and such other buildings as may be necessary for executing and completing the works, to have made local independent enquiries as to the sub-soil, subsoil water and variations thereof, storms, prevailing winds, climatic conditions and all other similar matters effecting these works. He is deemed to have acquainted himself as to his liability of payment of Government Taxes, Customs duty and other charges, levies etc.

Any neglect or omission or failure on the part of the CONTRACTOR in obtaining necessary and reliable information upon the foregoing or any other matters affecting the CONTRACT shall not relieve him from any risks or liabilities or the entire responsibility from completion of the works at the scheduled rates and times in strict accordance with the CONTRACT.

It is, therefore, expected that should the CONTRACTOR have any doubt as to the meaning of any portion of the CONTRACT DOCUMENT he shall set forth the particulars thereof in writing to EMPLOYER in duplicate, before submission of tender. The EMPLOYER may provide such clarification as may be necessary in writing to CONTRACT, such clarifications as provided by EMPLOYER shall form part of CONTRACT DOCUMENTS.

No verbal agreement or inference from conversation with any effect or employee of the EMPLOYER either before, during or after the execution of the CONTRACT agreement shall in any way affect or modify and of the terms or obligations herein contained.

Any change in layout due to site conditions or technological requirement shall be binding on the CONTRACTOR and no extra claim on this account shall be entertained.

24 Contract Performance Security:

24.1 The CONTRACTOR shall furnish to the EMPLOYER, within 15 days from the date of notification of award, a security in the sum of 10% of the accepted value of the tender or the actual value of work to be done whichever is applicable due to any additional work or any other reasons, in the form of a Bank draft/Banker's cheque or Bank Guarantee or irrevocable Letter of credit (as per proforma enclosed) as Contract Performance Security with the EMPLOYER which will be refunded after the expiry of DEFECTS LIABILITY PERIOD.

24.2 CONTRACTOR can furnish the Contract Performance Security in the form of Demand Draft or through a Bank Guarantee or through an irrevocable Letter of Credit from any Indian scheduled bank or a branch of an International bank situated in India and registered with Reserve Bank of India as scheduled foreign bank. However, other than the Nationalised Indian Banks, the banks whose BGs are furnished, must be commercial banks having net worth in excess of Rs. 100 crores and a declaration to this effect should be made by such commercial bank either in the bank guarantee itself or separately on a letter head.

The bank guarantee or the Letter of Credit shall be submitted in the prescribed format.

24.3 If the CONTRACTOR/SUB-CONTRACTOR or their employees or the CONTRACTOR's agents and representatives shall damage, break, deface or destroy any property belonging to the EMPLOYER or others during the execution of the CONTRACT, the same shall be made good by the CONTRACTOR at his own expenses and in default thereof, the ENGINEER-IN-CHARGE may cause the same to be made good by other agencies and recover expenses from the CONTRACTOR (for which the certificate of the ENGINEER- IN-CHARGE shall be final).

24.4 All compensation or other sums of money payable by the CONTRACTOR to the EMPLOYER under terms of this CONTRACT may be deducted from or paid by the encashment or sale of a sufficient part of his Contract Performance Security or from any sums which may be due or may become due to the CONTRACTOR by the EMPLOYER of any account whatsoever and in the event of his Contract Performance Security being reduced by reasons of any such deductions or sale of aforesaid, the CONTRACTOR shall within ten days thereafter make good in cash, bank drafts as aforesaid any sum or sums which may have been deducted from or realised by sale of his Contract Performance Security, or any part thereof. No interest shall be payable by the EMPLOYER for sum deposited as Contract Performance Security.

24.5 Failure of the successful bidder to comply with the requirements of this Clause shall constitute sufficient grounds for the annulment of the award and the forfeiture of bid security.

25 Time of Performance:

25.1 Time for Mobilisation

The work covered by this CONTRACT shall be commenced within fifteen (15) days, the date of letter/Fax of Intent and be completed in stages on or before the dates as mentioned in the TIME SCHEDULE OF COMPLETION OF WORK. The CONTRACTOR should bear in mind that time is the essence of this agreement. Request for revision of construction time after tenders are opened

will not receive consideration. The above period of fifteen (15) days is included within the overall COMPLETION SCHEDULE, not over and above the completion time to any additional work or any other reasons.

25.2 Time Schedule of Construction:

25.2.1 The general Time Schedule of construction is given in the TENDER DOCUMENT. CONTRACTOR should prepare a detailed monthly or weekly construction program jointly with the ENGINEER-IN-CHARGE within 15 days of receipt of LETTER/FAX OF INTENT or ACCEPTANCE OF TENDER. The WORK shall be executed strictly as per the Time Schedule given in the CONTRACT DOCUMENT. The period of construction given includes the time required for mobilisation testing, rectifications, if any, retesting and completion in all respects in accordance with CONTRACT DOCUMENT to the entire satisfaction of the ENGINEER-IN-CHARGE.

25.2.2 The CONTRACTOR shall submit a detailed PERT network within the time frame agreed above consisting of adequate number of activities covering various key phases of the WORK such as design, procurement, manufacturing, shipment and field erection activities within fifteen (15) days from the date of LETTER/FAX OF INTENT. This network shall also indicate the interface facilities to be provided by the EMPLOYER and the dates by which such facilities are needed.

25.2.3 CONTRACTOR shall discuss the network so submitted with the EMPLOYER and the agreed network which may be in the form as submitted with the EMPLOYER or in revised form in line with the outcome of discussions shall form part of the CONTRACT, to be signed within fifteen (15) days from the date of LETTER OF ACCEPTANCE OF TENDER. During the performance of the CONTRACT, if in the opinion of the EMPLOYER proper progress is not maintained suitable changes shall be made in the CONTRACTOR's operation to ensure proper progress.

The above PERT network shall be reviewed periodically and reports shall be submitted by the CONTRACTOR as directed by EMPLOYER.

26 Force Majeure:

26.1 CONDITIONS FOR FORCE MAJEURE

In the event of either party being rendered unable by Force Majeure to perform any obligations required to be performed by them under the CONTRACT the relative obligation of the party affected by such Force Majeures shall upon notification to the other party be suspended for the period during which Force Majeures event lasts. The cost and loss sustained by the either party shall be borne by the respective parties.

The term "Force Majeures" as employed herein shall mean acts of God, earthquake, war (declared or undeclared), revolts, riots, fires, floods, rebellions, explosions, hurricane, sabotage, civil commotions and acts and regulations of respective Government of the two parties, namely the EMPLOYER and the CONTRACTOR.

Upon the occurrence of such cause(s) and upon its termination, the party alleging that it has been rendered unable as aforesaid thereby, shall notify the other party in writing immediately but not later than 72 (Seventy-two) hours of the alleged beginning and ending thereof giving full particulars and satisfactory evidence in support of its claim.

Time for performance of the relative obligation suspended by the Force Majeures shall then stand extended by the period for which such cause lasts.

If deliveries of bought out items and/or works to be executed by the CONTRACTOR are suspended by Force Majeure conditions lasting for more than 2 (two) months the EMPLOYER shall have the option to terminate the CONTRACT or re-negotiate the contract provisions.

26.2 OUTBREAK OF WAR

26.2.1 If during the currency of the CONTRACT there shall be an out-break of war whether declared or not, in that part of the World which whether financially or otherwise materially affect the execution of the WORK the CONTRACTOR shall unless and until the CONTRACT is terminated under the provisions in this clause continue to use his best endeavour to complete the execution of the WORK, provided always that the EMPLOYER shall be entitled, at any time after such out-break of war to terminate or re-negotiate the CONTRACT by giving notice in writing to the CONTRACTOR and upon such notice being given the CONTRACT shall, save as to the rights of the parties under this clause and to the operation of the clauses entitled settlement of Disputes and Arbitration hereof, be terminated but without prejudice to the right of either party in respect of any antecedent breach thereof.

26.2.2 If the CONTRACT shall be terminated under the provisions of the above clause, the CONTRACTOR shall with all reasonable diligence remove from the SITE all the CONTRACTOR's equipment and shall give similar facilities to his SUB-CONTRACTORS to do so.

27 Price reduction schedule:

27.1 Time is the essence of the CONTRACT. In case the CONTRACTOR fails to complete the WORK within the stipulated period, then, unless such failure is due to Force Majeure as defined in Clause 26 here above or due to EMPLOYER's defaults, the Total Contract price shall be reduced by ½ % of the total Contract Price per complete week of delay or part thereof subject to a maximum of 5 % of the Total Contract Price, by way of reduction in price for delay and not as penalty. The said amount will be recovered from amount due to the Contractor/ Contractor's Contract Performance Security payable on demand.

The decision of the ENGINEER-IN-CHARGE in regard to applicability of Price Reduction Schedule shall be final and binding on the CONTRACTOR.

27.2 All sums payable under this clause is the reduction in price due to delay in completion period at the above agreed rate.

27.3 Bonus For Early Completion (*)

27.3 BONUS FOR EARLY COMPLETION

If the Contractor achieves completion of Works in all respect prior to the time schedule stipulated in the SCC, the Employer shall pay to the Contractor the relevant sum, if mentioned specifically in SCC, as bonus for early completion. The bonus for early completion, if provided specifically in SCC, shall be payable to the maximum ceiling of 2 ½ % of the total contract price.

(*) Partial earlier completion may not always produce net benefits to the Employer, for example where utilization of the completed Works requires (a) the fulfillment of all parts of the Contract (e.g. the training of personnel); or (b) the completion of all Sections (e.g. in pipeline laying, where early completion of the laying of pipeline would not be useful if the compressor is still under installation); or (c) certain seasonal effects to take place (e.g. onset of the rainy season, for impounding a reservoir); or (d) other circumstances. Also a more rapid drawdown of budgeted funds may be required. All such factors should be considered prior to the inclusion of a bonus clause in the Contract.

28 Rights of the employer to forfeit contract performance security:

28.1 Whenever any claim against the CONTRACTOR for the payment of a sum of money arises out or under the CONTRACT, the EMPLOYER shall be entitled to recover such sum by appropriating in part or whole the Contract Performance Security of the CONTRACTOR. In the event of the security being insufficient or if no security has been taken from the CONTRACTOR, then the balance or the total sum recoverable, as the case may be shall be deducted from any sum then due or which at any time thereafter may become due to the CONTRACTOR. The CONTRACTOR shall pay to the EMPLOYER on demand any balance remaining due.

29 Failure by the contractor to comply with the provisions of the contract:

29.1 If the CONTRACTOR refuses or fails to execute the WORK or any separate part thereof with such diligence as will ensure its completion within the time specified in the CONTRACT or extension thereof or fails to perform any of his obligation under the CONTRACT or in any manner commits a breach of any of the provisions of the CONTRACT it shall be open to the EMPLOYER at its option by written notice to the CONTRACTOR:

a) TO DETERMINE THE CONTRACT in which event the CONTRACT shall stand terminated and shall cease to be in force and effect on and from the date appointed by the EMPLOYER on that behalf, whereupon the CONTRACTOR shall stop forthwith any of the CONTRACTOR's work then in progress, except such WORK as the EMPLOYER may, in writing, require to be done to safeguard any property or WORK, or installations from damage, and the EMPLOYER, for its part, may take over the work remaining unfinished by the CONTRACTOR and complete the same through a fresh contractor or by other means, at the risk and cost of the CONTRACTOR, and any of his sureties if any, shall be liable to the EMPLOYER for any excess cost occasioned by such work having to be so taken over and completed by the EMPLOYER over and above the cost at the rates specified in the schedule of quantities and rate/prices.

b) WITHOUT DETERMINING THE CONTRACT to take over the work of the CONTRACTOR or any part thereof and complete the same through a fresh contractor or by other means at the risk and cost of the CONTRACTOR. The CONTRACTOR and any of his sureties are liable to the EMPLOYER for any excess cost over and above the cost at the rates specified in the Schedule of Quantities/ rates, occasioned by such works having been taken over and completed by the EMPLOYER.

29.2 In such events of Clause 29.1(a) or (b) above.

a) The whole or part of the Contract Performance Security furnished by the CONTRACTOR is liable to be forfeited without prejudice to the right of the EMPLOYER to recover from the CONTRACTOR the excess cost referred to in the sub-clause aforesaid, the EMPLOYER shall also have the right of taking possession and utilising in completing the works or any part thereof, such as materials equipment and plants available at work site belonging to the CONTRACTOR as may be necessary and the CONTRACTOR shall not be entitled for any compensation for use or damage to such materials, equipment and plant.

b) The amount that may have become due to the CONTRACTOR on account of work already executed by him shall not be payable to him until after the expiry of Six (6) calendar months reckoned from the date of termination of CONTRACT or from the taking over of the WORK or part thereof by the EMPLOYER as the case may be, during which period the responsibility for faulty materials or workmanship in respect of such work shall, under the CONTRACT, rest exclusively with the CONTRACTOR. This amount shall be subject to deduction of any amounts due from the CONTRACT to the EMPLOYER under the terms of the CONTRACT authorised or required to be reserved or retained by the EMPLOYER.

29.3 Before determining the CONTRACT as per Clause 29.1(a) or (b) provided in the judgement of the EMPLOYER, the default or defaults committed by the CONTRACTOR is/are curable and can be cured by the CONTRACTOR if an opportunity given to him, then the EMPLOYER may issue Notice in writing calling the CONTRACTOR to cure the default within such time specified in the Notice.

29.4 The EMPLOYER shall also have the right to proceed or take action as per 29.1(a) or (b) above, in the event that the CONTRACTOR becomes bankrupt, insolvent, compounds with his creditors, assigns the CONTRACT in favour of his creditors or any other person or persons, or being a company or a corporation goes into voluntary liquidation, provided that in the said events it shall not be necessary for the EMPLOYER to give any prior notice to the CONTRACTOR.

29.5 Termination of the CONTRACT as provided for in sub- clause 29.1(a) above shall not prejudice or affect their rights of the EMPLOYER which may have accrued upto the date of such termination.

30 Contractor remains liable to pay compensation if

30.1 In any case in which any of the powers conferred upon the EMPLOYER BY CLAUSE 29.0 thereof shall have become

action not taken under clause 29:

exercisable and the same had not been exercised, the non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable in .the event of any further case of default by the CONTRACTOR for which by any clause or clauses hereof he is declared liable to pay compensation amounting to the whole of his Contract Performance Security, and the liability of the CONTRACTOR for past and future compensation shall remain unaffected. In the event of the EMPLOYER putting in force the power under above sub-clause (a), (b) or (c) vested in him under the preceding clause he may, if he so desired, take possession of all or any tools, and plants, materials and stores in or upon the works or the site thereof belonging to the CONTRACTOR or procured by him and intended to be used for the execution of the WORK or any part thereof paying or allowing for the same in account at the CONTRACT rates or in case of these not being applicable at current market rates to be certified by the ENGINEER-IN-CHARGE whose certificate thereof shall be final, otherwise the ENGINEER-IN- CHARGE may give notice in writing to the CONTRACTOR or his clerk of the works, foreman or other authorised agent, requiring him to remove such tools, plant, materials or stores from the premises (within a time to be specified in such notice), and in the event of the CONTRACTOR failing to comply with any such requisition, the ENGINEER-IN-CHARGE may remove them at the CONTRACTOR's expense or sell them by auction or private sale on account of the CONTRACTOR and at his risk in all respects without any further notice as to the date, time or place of sale and the certificate of the ENGINEER-IN-CHARGE as to the expenses of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the CONTRACTOR.

31 Change in constitution:

31.1 Where the CONTRACTOR is a partnership firm, the prior approval of the EMPLOYER shall be obtained in writing, before any change is made in the constitution of the firm. Where the CONTRACTOR is an individual or a Hindu undivided family business concern, such approval as aforesaid shall,likewise be obtained before such CONTRACTOR enters into any agreement with other parties, where under, the reconstituted firm would have the right to carry out the work hereby undertaken by the CONTRACTOR. In either case if prior approval as aforesaid is not obtained, the CONTRACT shall be deemed to have been allotted in contravention of clause 37 hereof and the same action may be taken and the same consequence shall ensure as provided in the said clause.

32 Termination of contract

32(A) TERMINATION OF CONTRACT FOR DEATH:

If the CONTRACTOR is an individual or a proprietary concern and the individual or the proprietor dies or if the CONTRACTOR is a partnership concern and one of the partner dies then unless, the EMPLOYER is satisfied that the legal representative of the individual or the proprietory concern or the surviving partners are capable of carrying out and completing CONTRACT, he (the EMPLOYER)is entitled to cancel the CONTRACT for the uncompleted part without being in any way liable for any compensation payment to the estate of the diseased CONTRACTOR and/or to the surviving partners of the CONTRACTOR'S firm on account of the cancellation of CONTRACT. The decision of the EMPLOYER in such

assessment shall be final and binding on the parties. In the event of such cancellation, the EMPLOYER shall not hold the estate of the diseased CONTRACTOR and/or the surviving partners of the CONTRACTOR'S firm liable for any damages for non-completion of CONTRACT.

32(B) TERMINATION OF CONTRACT IN CASE OF LIQUIDATION / BANKRUPTCY ETC.

If the Contractor shall dissolve or become bankrupt or insolvent or cause or suffer any receiver to be appointed of his business of any assets thereof compound with his Creditors, or being a corporation commence to be wound up, not being a member's voluntary winding up for the purpose of amalgamation or reconstruction, or carry on its business under a Receiver for the benefits of its Creditors any of them, EMPLOYER shall be at liberty :-

To terminate the contract forthwith upon coming to know of the happening of any such event as aforesaid by notice in writing to the Contractor or to give the Receiver or liquidator or other person, the option of carrying out the contract subject to his providing a guarantee upto an amount to be agreed upon by EMPLOYER for due and faithful performance of the contract.

32 (C) TERMINATION OF CONTRACT FOR NON-PERFORMANCE AND SUBSEQUENTLY PUTTING THE CONTRACTOR ON HOLIDAY:

In case of termination of CONTRACT herein set forth (under clause 29.0) except under conditions of Force Majeure and termination after expiry of contract, the CONTRACTOR shall be put under holiday [i.e. neither any enquiry will be issued to the party by GAIL (India) Ltd. against any type of tender nor their offer will be considered by GAIL against any ongoing tender (s) where contract between GAIL and that particular CONTRACTOR (as a bidder) has not been finalized] for three years from the date of termination by GAIL (India) Ltd. to such CONTRACTOR**.**

33 Members of the employer not individually liable :

33.1 No Director, or official or employee of the EMPLOYER/ CONSULTANT shall in any way be personally bound or liable for the acts or obligations of the EMPLOYER under the CONTRACT or answerable for any default or omission in the observance or performance of any of the acts, matters or things which are herein contained.

34 Employer not bound by personal representations:

34.1 The CONTRACTOR shall not be entitled to any increase on the scheduled rates or any other right or claim whatsoever by reason of any representation, explanation statement or alleged representation, promise or guarantees given or alleged to have been given to him by any person.

35 Contractor's office at site:

35.1 The CONTRACTOR shall provide and maintain an office at the site for the accommodation of his agent and staff and such office shall be open at all reasonable hours to receive instructions, notice or other communications. The CONTRACTOR at all time shall maintain a site instruction book and compliance of these shall be communicated to the ENGINEER-IN CHARGE from time to time and the whole document to be preserved and handed over after completion of works.

36 Contractor's subordinate staff and their conduct

36.1 The CONTRACTOR, on or after award of the WORK shall name and depute a qualified engineer having sufficient experience in carrying out work of similar nature, to whom the equipments, materials, if any, shall be issued and instructions for works given. The CONTRACTOR shall also provide to the satisfaction of the ENGINEER-IN- CHARGE sufficient and qualified staff to superintend the execution of the WORK, competent sub-agents, foremen and leading hands including those specially qualified by previous experience to supervise the types of works comprised in the CONTRACT in such manner as will ensure work of the best quality, expeditious working. Whenever in the opinion of the ENGINEER-IN- CHARGE additional properly qualified supervisory staff is considered necessary, they shall be employed by the CONTRACTOR without additional charge on accounts thereof. The CONTRACTOR shall ensure to the satisfaction of the ENGINEER-IN-CHARGE that SUB- CONTRACTORS, if any, shall provide competent and efficient supervision, over the work entrusted to them.

36.2 If and whenever any of the CONTRACTOR's or SUB- CONTRACTOR'S agents, sub-agents, assistants, foremen, or other employees shall in the opinion of ENGINEER-IN- CHARGE be guilty of any misconduct or be incompetent or insufficiently qualified or negligent in the performance of their duties of that in the opinion of the EMPLOYER or the ENGINEER-IN-CHARGE, it is undesirable for administrative or any other reason for such person or persons to be employed in the works, the CONTRACTOR, is so directed by the ENGINEER-IN-CHARGE, shall at once remove such person or persons from employment thereon. Any person or persons so removed from the works shall not again be employed in connection with the WORKS without the written permission of the ENGINEER-IN- CHARGE. Any person so removed from the WORK shall be immediately re-placed at the expense of the CONTRACTOR by a qualified and competent substitute. Should the CONTRACTOR be requested to repatriate any person removed from the works he shall do so and shall bear all costs in connection herewith.

36.3 The CONTRACTOR shall be responsible for the proper behaviour of all the staff, foremen, workmen, and others, and shall exercise a proper degree of control over them and in particular and without prejudice to the said generality, the CONTRACTOR shall be bound to prohibit and prevent any employees from trespassing or acting in any way detrimental or prejudicial to the interest of the community or of the properties or occupiers of land and properties in the neighborhood and in the event of such employee so trespassing, the CONTRACTOR shall be responsible therefore and relieve the EMPLOYER of all consequent claims or actions for damages or injury or any other grounds whatsoever. The decision of the ENGINEER-IN-CHARGE upon any matter arising under this clause shall be final. The CONTRACTOR shall be liable for any liability to EMPLOYER on account of deployment of CONTRACTOR's staff etc. or incidental or arising out of the execution of CONTRACT.

The CONTRACTOR shall be liable for all acts or omissions on the part of his staff, Foremen and Workmen and others in his employment, including misfeasance or negligence of whatever

kind in the course of their work or during their employment, which are connected directly or indirectly with the CONTRACT.

36.4 If and when required by the EMPLOYER and CONTRACTOR's personnel entering upon the EMPLOYER's premises shall be properly identified by badges of a type acceptable to the EMPLOYER which must be worn at all times on EMPLOYER's premises. CONTRACTOR may be required to obtain daily entry passes for his staff/employees from EMPLOYER to work within operating areas. These being safety requirements, no relaxations on this account shall be given to CONTRACTOR.

37 Sub-letting of works:

37.1 No part of the CONTRACT nor any share or interest therein shall in any manner or degree be transferred, assigned or sublet by the CONTRACTOR directly or indirectly to any person, firm or corporation whatsoever without the consent in writing, of the ENGINEER/EMPLOYER except as provided for in the succeeding sub-clause.

i) SUB-CONTRACTS FOR TEMPORARY WORKS ETC.:

The EMPLOYER may give written consent to Sub- contract for the execution of any part of the WORK at the site, being entered in to by CONTRACTOR provided each individual Sub- contract is submitted to the ENGINEER-IN-CHARGE before being entered into and is approved by him.

ii) LIST OF SUB-CONTRACTORS TO BE SUPPLIED:

At the commencement of every month the CONTRACTOR shall furnish to the ENGINEER-IN- CHARGE list of all SUB-CONTRACTORS or other persons or firms engaged by the CONTRACTOR and working at the SITE during the previous month with particulars of the general nature of the Subcontract or works done by them.

iii) CONTRACTOR'S LIABILITY NOT LIMITED BY SUB- CONTRACTORS:

Notwithstanding any sub-letting with such approval as aforesaid and notwithstanding that the ENGINEER-I N-CHARGE shall have received copies of any Subcontracts, the contractor shall be and shall remain solely responsible for the quality, proper and expeditious execution of the Contract in all respects as if such sub-letting or Subcontracting had not taken place, and as if such work had been done directly by the CONTRACTOR. The CONTRACTOR shall bear all responsibility for any act or omission on the part of sub-contractors in regard to work to be performed under the CONTRACT.

iv) EMPLOYER MAY TERMINATE SUB-CONTRACTS:

If any SUB-CONTRACTOR engaged upon the works at the site executes any works which in the opinion of the ENGINEER-IN-CHARGE is not in accordance with the CONTRACT documents, the EMPLOYER may by written notice to the CONTRACTOR request him to terminate such subcontract and the CONTRACTOR upon the receipt of

such notice shall terminate such Subcontract and dismiss the SUB-CONTRACTOR(S) and the later shall forthwith leave the works, failing which the EMPLOYER shall have the right to remove such SUB- CONTRACTOR(S) from the site.

v) NO REMEDY FOR ACTION TAKEN UNDER THIS CLAUSE:

No action taken by the EMPLOYER under the clause shall relieve the CONTRACTOR of any of his liabilities under the CONTRACT or give rise to any right or compensation, extension of time or otherwise failing which the EMPLOYER shall have the right to remove such SUB-CONTRACTOR(S) from the site.

38 Power of entry:

38.1 If the CONTRACTOR shall not commence the WORK in the manner previously described in the CONTRACT documents or if he shall at any time in the opinion of the ENGINEER-I N-CHARGE.

i) fail to carry out the WORK in conformity with the CONTRACT documents, or

ii) fail to carry out the WORK in accordance with the Time Schedule, or

iii) substantially suspend work or the WORK for a period of fourteen days without authority from the ENGINEER-IN-CHARGE, or

iv) fail to carry out and execute the WORK to the satisfaction of the ENGINEER-IN-CHARGE, or

v) fail to supply sufficient or suitable construction plant, temporary works, labour, materials or things, or

vi) Commit, suffer, or permit any other breach of any of the provisions of the CONTRACT on his part to be performed or observed or persist in any of the above mentioned breaches of the CONTRACT for fourteen days, after notice in writing shall have been given to the CONTRACTOR by the ENGINEER-IN-CHARGE requiring such breach to be remedied, or

vii) if the CONTRACTOR shall abandon the WORK , or

viii) If the CONTRACTOR during the continuance of the CONTRACT shall become bankrupt, make any arrangement or composition with his creditors, or permit any execution to be levied or go into liquidation whether compulsory or voluntary not being merely a voluntary liquidation for the purpose of amalgamation or reconstruction

then in any such case, the EMPLOYER shall have the power to enter upon the WORK and take possession thereof and of the materials, temporary WORK, construction plant, and stock thereon, and to revoke the CONTRACTOR's licence to use the same, and to complete the WORK by his agents, other CONTRACTORS or workmen or to relate the same upon any terms and to such other person, firm or corporation as the

EMPLOYER in his absolute discretion may think proper to employ and for the purpose aforesaid to use or authorise the use of any materials, temporary work, CONSTRUCTION PLANT, and stock as aforesaid, without making payment or allowance to the CONTRACTOR for the said materials other than such as may be certified in writing by the ENGINEER-IN-CHARGE to be reasonable, and without making any payment or allowance to the CONTRACTOR for the use of the temporary said works, construction plant and stock or being liable for any loss or damage thereto, and if the EMPLOYER shall by reason of his taking possession of the WORK or of the WORK being completed by other CONTRACTOR (due account being taken of any such extra work or works which may or be omitted) then the amount of such excess as certified by the ENGINEER-IN- CHARGE shall be deducted from any money which may be due for work done by the CONTRACTOR under the CONTRACT and not paid for. Any deficiency shall forthwith be made good and paid to the EMPLOYER by the CONTRACTOR and the EMPLOYER shall have power to sell in such manner and for such price as he may think fit all or any of the construction plant, materials etc. constructed by or belonging to and to recoup and retain the said deficiency or any part thereof out of proceeds of the sale.

39 Contractor's responsibility with the mechanical, electrical, intercommunication system, airconditioning contractors and other agencies:

39.1 Without repugnance of any other condition, it shall be the responsibility of the CONTRACTOR executing the work of civil construction, to work in close cooperation and coordinate the WORK with the Mechanical, Electrical, Air-conditioning and Intercommunication Contractor's and other agencies or their authorised representatives, in providing the necessary grooves, recesses, cuts and opening etc., in wall, slabs beams and columns etc. and making good the same to the desired finish as per specification, for the placement of electrical, intercommunication cables, conduits, air-conditioning inlets and outlets grills and other equipments etc. where required. For the above said requirements in the false ceiling and other partitions, the CONTRACTOR before starting-up the work shall in consultation with the Electrical, Mechanical, Intercommunication, Air-conditioning contractor and other agencies prepare and put-up a joint scheme, showing the necessary openings, grooves, recesses, cuts, the methods of fixing required for the WORK of the aforesaid, and the finishes therein, to the ENGINEER-IN-CHARGE and get the approval. The CONTRACTOR before finally submitting the scheme to the ENGINEER-IN-CHARGE, shall have the written agreement of the other agencies. The ENGINEER- IN-CHARGE, before communicating his approval to the scheme, with any required modification, shall get the final agreement of all the agencies, which shall be binding. No claim shall be entertained on account of the above.

The CONTRACTOR shall confirm in all respects with provision of any statutory regulations, ordinances or byelaws of any local or duly constituted authorities or public bodies which may be applicable from time to time to the WORK or any temporary works. The CONTRACTOR shall keep the EMPLOYER indemnified against all penalties and liabilities of every kind, arising out of non- adherance to such stains, ordinances, laws, rules, regulations, etc.

40 Other agencies at site:

40.1 The CONTRACTOR shall have to execute the WORK in such place and conditions where other agencies will also be engaged for other works such as site grading, filling, and levelling, electrical and mechanical engineering works, etc. No claim shall be entertained due to WORK being executed in the above circumstances.

41 Notice:

41.1 TO THE CONTRACTOR:

Any notice hereunder may be served on the CONTRACTOR or his duly authorised representative at the job site or may be served by registered mail direct to the address furnished by the CONTRACTOR. Proof of issue of any such notice could be conclusive of the CONTRACTOR having been duly informed of all contents therein.

41.2 TO THE EMPLOYER:

Any notice to be given to the EMPLOYER under the terms of the CONTRACTOR shall be served by sending the same by Registered mail to or delivering the same at the respective site offices of M/S. GAIL (INDIA) LTD. addressed to the HEAD/SITE-IN-CHARGE.

42 Right of various interests:

42.1 i) The EMPLOYER reserves the right to distribute the work between more than one agency(ies). The CONTRACTOR shall cooperate and afford other agency(ies) reasonable opportunity for access to the WORK for the carriage and storage of materials and execution of their works.

ii) Wherever the work being done by any department of the EMPLOYER or by other agency(ies) employed by the EMPLOYER is contingent upon WORK covered by this CONTRACT, the respective rights of the various interests involved shall be determined by the ENGINEER-IN-CHARGE to secure the completion of the various portions of the work in general harmony.

43 Patents and royalties:

43.1 The CONTRACTOR, if licensed under any patent covering equipment, machinery, materials or compositions of matter to be used or supplied or methods and process to be practised or employed in the performance of this CONTRACT, agrees to pay all royalties and licence fees which may be due with respect thereto. If any equipment, machinery, materials, composition of matters, be used or supplied or methods and processes to be practised or employed in the performance of this CONTRACT,is covered by a patent under which the CONTRACTOR is not licensed then the CONTRACTOR before supplying or using the equipment, machinery materials, composition method or processes shall obtain such licences and pay such royalties and licence fees as may be necessary for performance of this CONTRACT. In the event the CONTRACTOR fails to pay any such royalty or obtain any such licence, any suit for infringement of such patents which is brought against the CONTRACTOR or the EMPLOYER as a result such failure will be defended by the CONTRACTOR at his own expense and the CONTRACTOR will pay any damages and costs awarded in such suit. The CONTRACTOR shall promptly notify the EMPLOYER if the CONTRACTOR has acquired the knowledge of any plant under

which a suit for infringement could be reasonably brought because of the use by the EMPLOYER of any equipment, machinery, materials, process, methods to be supplied hereunder. The CONTRACTOR agrees to and does hereby grant to EMPLOYER, together with the right to extend the same to any of the subsidiaries of the EMPLOYER as irrevocable, royalty free licence to use in any country, any invention made by the CONTRACTOR or his employee in or as result of the performance of the WORK under the CONTRACT.

43.2 All charges on account of royalty. toilage, rent, octroi terminal or sales tax and/or other duties or any other levy on materials obtained for the work or temporary work or part thereof (excluding materials provided by the EMPLOYER) shall be borne by the CONTRACTOR.

43.3 The CONTRACTOR shall not sell or otherwise dispose of or remove except for the purpose of this CONTRACT, the sand, stone, clay, ballast, earth, rock or other substances, or materials obtained from any excavation made for the purpose of the WORK or any building or produce upon the site at the time of delivery of the possession thereof, but all such substances, materials, buildings and produce shall be the property of the EMPLOYER provided that the CONTRACTOR may with the permission of the ENGINEER-IN-CHARGE, use the same for the purpose of the work by payment of cost of the same at such a rate as may be determined by the ENGINEER-IN- CHARGE.

43.4 The EMPLOYER shall indemnify and save harmless the CONTRACTOR from any loss on account of claims against CONTRACTOR for the contributory infringement of patent rights arising out and based upon the claim that the use of the EMPLOYER of the process included in the design prepared by the EMPLOYER and used in the operation of the plant infringes on any patent right. With respect to any subcontract entered into by CONTRACTOR pursuant to the provisions of the relevant clause hereof, the CONTRACTOR shall obtain from the SUB-CONTRACTOR an undertaking to provide the EMPLOYER with the same patent protection that CONTRACTOR is required to provide under the provisions of this clause.

44 Liens:

44.1 If, at any time there should be evidence or any lien or claim for which the EMPLOYER might have become liable and which is chargeable to the CONTRACTOR, the EMPLOYER shall have the right to retain out of any payment then due or thereafter to become due an amount sufficient to completely indemnify the EMPLOYER against such lien or claim and if such lien or claim be valid, the EMPLOYER may pay and discharge the same and deduct the amount so paid from any money which may be or may become due and payable to the CONTRACTOR. If any lien or claim remain unsettled after all payments are made, the CONTRACTOR shall refund or pay to the EMPLOYER all money that the latter may be compelled to pay in discharging such lien or claim including all costs and reasonable expenses. EMPLOYER reserves the right to do the same.

44.2 The EMPLOYER shall have lien on all materials, equipments including those brought by the CONTRACTOR for the purpose of erection, testing and commissioning of the WORK.

44.3 The final payment shall not become due until the CONTRACTOR delivers to the ENGINEER-IN-CHARGE a complete release or waiver of all liens arising or which may arise out of his agreement or receipt in full or certification by the CONTRACTOR in a form approved by ENGINEER-IN-CHARGE that all invoices for labour, materials, services have been paid in lien thereof and if required by the ENGINEER-IN-CHARGE in any case an affidavit that so far as the CONTRACTOR has knowledge or information the releases and receipts include all the labour and material for which a lien could be filled.

44.4 CONTRACTOR will indemnify and hold the EMPLOYER harmless, for a period of two years after the issue of FINAL CERTIFICATE, from all liens and other encumbrances against the EMPLOYER on account of debts or claims alleged to be due from the CONTRACTOR or his SUB-CONTRACTOR to any person including SUB- CONTRACTOR and on behalf of EMPLOYER will defend at his own expense, any claim or litigation brought against the EMPLOYER or the CONTRACTOR in connection therewith. CONTRACTOR shall defend or contest at his own expense any fresh claim or litigation by any person including his SUB-CONTRACTOR, till its satisfactory settlement even after the expiry of two years from the date of issue of FINAL CERTIFICATE.

45 Delays by employer or his authorised agents:

45.1 In case the CONTRACTOR's performance is delayed due to any act or omission on the part of the EMPLOYER or his authorised agents, then the CONTRACTOR shall be given due extension of time for the completion of the WORK, to the extent such omission on the part of the EMPLOYER has caused delay in the CONTRACTOR's performance of his WORK.

45.2 No adjustment in CONTRACT PRICE shall be allowed for reasons of such delays and extensions granted except as provided in TENDER DOCUMENT, where the EMPLOYER reserves the right to seek indulgence of CONTRACTOR to maintain the agreed Time Schedule of Completion.

In such an event the CONTRACTOR shall be obliged for working by CONTRACTOR's personnel for additional time beyond stipulated working hours as also Sundays and Holidays and achieve the completion date/interim targets.

46 Payment if the contract is terminated:

46.1 If the CONTRACT shall be terminated as per Tender pursuant to Clause no. 29 of GCC, the CONTRACTOR shall be paid by the EMPLOYER in so far as such amounts or items shall not have already been covered by payments of amounts made to the CONTRACTOR for the WORK executed and accepted by ENGINEER-IN-CHARGE prior to the date of termination at the rates and prices provided for in the CONTRACT and in addition to the following:

a) The amount payable in respect of any preliminary items, so far as the Work or service comprised therein has been carried out or performed and an appropriate portion as certified by ENGINEER-IN- CHARGE of any such items or service comprised in which has been partially carried out or performed.

b) Any other expenses which the CONTRACTOR has expended for performing the WORK under the CONTRACT subject to being duly recommended by ENGINEER-IN-CHARGE and approved by EMPLOYER for payment, based on documentary evidence of his having incurred such expenses.

46.2 The CONTRACTOR will be further required to transfer the title and provide the following in the manner and as directed by the EMPLOYER.

a) Any and all completed works.

b) Such partially completed WORK including drawings, informations and CONTRACT rights as the CONTRACTOR has specially performed, produced or acquired for the performance of the CONTRACTOR.

47 No waiver of rights:

47.1 Neither the inspection by the EMPLOYER or any of their officials, employees, or agents nor any order by the EMPLOYER for payment of money or any payment for or acceptance of the whole or any part of the Work by the EMPLOYER nor any extension of time, nor any possession taken by EMPLOYER shall operate as a waiver of any provision of the CONTRACT, or of any power herein reserved to the EMPLOYER, or any right to damages herein provided, nor shall any waiver of any breach in the CONTRACT be held to be a waiver of any other subsequent breach.

48 Certificate not to affect right of employer and liability of contractor:

48.1 No interim payment certificate(s) issued by the Engineer-in-Charge of the EMPLOYER, nor any sum paid on account by the EMPLOYER, nor any extension of time for execution of the work granted by EMPLOYER shall affect or prejudice the rights of the Employer against the CONTRACTOR or relieve the CONTRACTOR of his obligations for the due performance of the CONTRACT, or be interpreted as approval of the WORK done or of the equipment supplied and no certificate shall create liability for the EMPLOYER to pay for alterations, amendments, variations or additional works not ordered, in writing, by EMPLOYER or discharge the liability of the CONTRACTOR for the payment of damages whether due, ascertained, or certified or not or any sum against the payment of which he is bound to indemnify the EMPLOYER.

49 Language and measures:

49.1 All documents pertaining to the CONTRACT including Specifications, Schedules, Notices, Correspondence, operating and maintenance Instructions, DRAWINGS, or any other writing shall be written in English language. The Metric System of measurement shall be used in the CONTRACT unless otherwise specified.

50 Transfer of title:

50.1 The title of Ownership of supplies furnished by the CONTRACTOR shall not pass on to the EMPLOYER for all Supplies till the same are finally accepted by the EMPLOYER after the successful completion of PERFORMANCE TEST and GUARANTEE TEST and issue of FINAL CERTIFICATE.

50.2 However, the EMPLOYER shall have the lien on all such works performed as soon as any advance or progressive payment is made by the EMPLOYER to the CONTRACTOR and the

CONTRACTOR shall not subject these works for use other than those intended under this CONTRACT.

51 Release of information:

51.1 The CONTRACTOR shall not communicate or use in advertising, publicity, sales releases or in any other medium, photographs, or other reproduction of the Work under this CONTRACT or description of the site dimensions, quantity , quality or other information, concerning the Work unless prior written permission has been obtained from the EMPLOYER.

52 Brand names:

52.1 The specific reference in the SPECIFICATIONS and documents to any material by trade name, make or catalogue number shall be construed as establishing standard or quality and performance and not as limited competition. However, TENDERER may offer other similar equipments provided it meets the specified standard design and performance requirements.

53 Completion of contract:

53.1 Unless otherwise terminated under the provisions of any other relevant clause, this CONTRACT shall be deemed to have been completed at the expiration of the PERIOD OF LIABILITY as provided for under the CONTRACT.

54 Spares:

54.1 The CONTRACTOR shall furnish to the EMPLOYER all spares required for COMMISSIONING of the plants, recommendatory and/or mandatory spares, which are required essential by the manufacturer/supplier. The same shall be delivered at SITE, 3(Three) months before COMMISSIONING.

Also the CONTRACTOR should furnish the manufacturing drawings for fast wearing spares.

54.2 The CONTRACTOR guarantees the EMPLOYER that before the manufacturers of the equipments, plants and machineries go out of production of spare parts for the equipment furnished and erected by him, he shall give at least twelve (12) months' advance notice to the EMPLOYER, so that the latter may order his requirement of spares in one lot, if he so desires.

SECTION-V PERFORMANCE OF WORK

55 Execution of work:

55.1 All the Works shall be executed in strict conformity with the provisions of the CONTRACT Documents and with such explanatory detailed drawings, specification and instructions as may be furnished from time to time to the CONTRACTOR by the ENGINEER-IN-CHARGE whether mentioned in the CONTRACT or not. The CONTRACTOR shall be responsible for ensuring that works throughout are executed in the most substantial, proper and workmanlike manner with the quality of material and workmanship in strict accordance with the SPECIFICATIONS and to the entire satisfaction of the ENGINEER-IN-CHARGE. The CONTRACTOR shall provide all necessary materials equipment labour etc. for execution and maintenance of WORK till completion unless otherwise mentioned in the CONTRACT.

56 Co-ordination and inspection of work:

56.1 The coordination and inspection of the day-to-day work under the CONTRACT shall be the responsibility of the ENGINEER-IN-CHARGE. The written instruction regarding any particular job will normally be passed by the ENGINEER-IN-CHARGE or his authorised representative. A work order book will be maintained by the CONTRACTOR for each sector in which the aforesaid written instructions will be entered. These will be signed by the CONTRACTOR or his authorised representative by way of acknowledgement within 12 hours.

57 Work in monsoon and dewatering:

57.1 Unless otherwise specified elsewhere in the tender, the execution of the WORK may entail working in the monsoon also. The CONTRACTOR must maintain a minimum labour force as may be required for the job and plan and execute the construction and erection according to the prescribed schedule. No extra rate will be considered for such work in monsoon.

57.2 During monsoon and other period, it shall be the responsibility of the CONTRACTOR to keep the construction work site free from water at his own cost.

58 Work on Sundays and Holidays:

58.1 For carrying out Work on Sundays, and Holidays, the CONTRACTOR will approach the ENGINEER-IN-CHARGE or his representative at least two days in advance and obtain permission in writing. The CONTRACTOR shall observe all labour laws and other statutory rules and regulations in force. In case of any violations of such laws, rules and regulations, consequence if any, including the cost thereto shall be exclusively borne by the CONTRACTOR and the EMPLOYER shall have no liability whatsoever on this account.

59 General conditions for construction and erection work:

59.1 The working time at the site of work is 48 hours per week. Overtime work is permitted in cases of need and the EMPLOYER will not compensate the same. Shift working at 2 or 3 shifts per day will become necessary and the CONTRACTOR should take this aspect into consideration for formulating his rates for quotation. No extra claims will be entertained by the EMPLOYER no this account. For carrying out work beyond working hours the CONTRACTOR will approach the ENGINEER-IN-CHARGE or his authorised representative and obtain his prior written permission.

59.2 The CONTRACTOR must arrange for the placement of workers in such a way that the delayed completion of the WORK or any part thereof for any reason whatsoever will not affect their proper employment. The EMPLOYER will not entertain any claim for idle time payment whatsoever.

59.3 The CONTRACTOR shall submit to the EMPLOYER/ENGINEER-IN- CHARGE reports at regular intervals regarding the state and progress of WORK. The details and proforma of the report will mutually be agreed after the award of CONTRACT. The CONTRACTOR shall provide display boards showing progress and labour strengths at worksite, as directed by the ENGINEER-IN-CHARGE.

60 Alterations in specifications, design and extra works:

60.1 The WORK covered under this CONTRACT having to be executed by the CONTRACTOR on a lumpsum firm price/item rate quoted by him, the EMPLOYER will not accept any proposals for changes in VALUE OF CONTRACT or extension in time on account of any such changes which may arise to the CONTRACTOR's scope of WORK as a result of detailed Engineering and thereafter during the execution of WORK. The only exception to this will be a case where the EMPLOYER requests in writing to the CONTRACTOR to upgrade the SPECIFICATIONS or the size of any major pieces of equipments, plant or machinery beyond what is normally required to meet the scope of WORK as defined in the CONTRACT DOCUMENT.

In such cases, a change order will be initialled by the CONTRACTOR at the appropriate time for the EMPLOYER's prior approval giving the full back-up data for their review and for final settlement of any impact on price within 30 (thirty) days thereafter.

60.2 The ENGINEER-IN-CHARGE shall have to make any alterations in, omission from, additions to or substitutions for, the Schedule of Rates, the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the WORK and the CONTRACTOR shall be bound to carry out the such altered/ extra/ new items of WORK in accordance with any instructions which may be given to him in writing signed by the ENGINEER-IN- CHARGE, and such alterations, omissions, additions or substitutions shall not invalidate the CONTRACT and any altered, additional or substituted work which the CONTRACTOR may be directed to do in the manner above specified as part of the WORK shall be carried out by the CONTRACTOR on the same conditions in all respects on which he agreed to do the main WORK. The time of completion of WORK may be extended for the part of the particular job at the discretion of the ENGINEER-IN- CHARGE, for only such alterations, additions or substitutions of the WORK, as he may consider as just and reasonable. The rates for such additional, altered or substituted WORK under this clause shall be worked out in accordance with the following provisions:-

I. <u>For Item Rate Contract</u>

a) If the rates for the additional, altered or substituted WORK are specified in the CONTRACT for the WORK, the CONTRACTOR is bound to carry on the additional, altered or substituted WORK at the same rates as are specified in the CONTRACT.

b) If the rates for the additional, altered or substituted WORK are not specifically provided in the CONTRACT for the WORK, the rates will be derived from the rates for similar class of WORK as are specified in the CONTRACT for the WORK. The opinion of the ENGINEER-IN- CHARGE, as to whether or not the rates can be reasonably so derived

from the items in this CONTRACT will be final and binding on the CONTRACTOR.

c) If the rates for the altered, additional or substituted WORK cannot be determined in the manner specified in sub-clause(s) and (b) above, then the CONTRACTOR shall, within 7 days of the date of receipt of order to carry out the WORK, inform the ENGINEER-IN-CHARGE of the rates which it is his intention to charge for such class of WORK, supported by analysis of the rate or rates claimed, and the ENGINEER-IN-CHARGE shall determine the rate or rates on the basis of the prevailing market rates, labour cost at schedule of labour rates plus 10% to cover contractor's supervision, overheads and profit and pay the CONTRACTOR accordingly. The opinion of the ENGINEER- IN-CHARGE as to current market rates of materials and the quantum of labour involved per unit of measurement will be final and binding on the CONTRACTOR.

d) Where the item of work will be executed through nominated specialist agency as approved by the ENGINEER-IN-CHARGE, then the actual amount paid to such nominated agency supported by documentary evidence and as certified by ENGINEER-IN-CHARGE shall be considered plus 10% (ten percent) to cover all contingencies, overhead, profits to arrive at the rates.

e) Provisions contained in the Sub-clause (a) & (d) above shall, however, not apply for the following:-

Where the value of additions of new items together with the value of alterations, additions/deletions or substitutions does not exceed by or is not less than plus/minus (±)25% of the VALUE OF CONTRACT. The item rates in the Schedule of Rates shall hold good for all such variations between the above mentioned limits, irrespective of any increase/decrease of quantities in the individual items of Schedule of Rates.

Where the value of addition of new items together with the value of alterations, additions/deletions or substitutions reduces more than 25% of the contract value but is within the following limits the tenderer shall be paid compensation for decrease in the value of work, as follows:

S.No.	Range of Variation	Percentage compensation for decrease in the value of work in the respective range.
a)	Beyond (+) 25% upto & inclusive of (+) 50%	No increase and/or decrease shall be applicable for the Schedule of Rates

		(The rates quoted for this increase shall be valid).
b)	Beyond (-) 25% upto & inclusive of (-) 50%	For reduction beyond 25%contractor shall be compensated by an amount equivalent to 10% of the reduction in value of the contract as awarded. For example if the actual contract value is 70% of awarded value then compensation shall be 10% of (75-70) i.e. 0.5% of awarded contract value.

II. <u>For Lumpsum Contracts</u>

CONTRACTOR shall, within 7 days of the date of receipt of order to carry out the WORK, inform the ENGINEER-IN- CHARGE of the rates which it is his intention to charge for such class of WORK, supported by analysis of the rate or rates claimed, and the ENGINEER-IN-CHARGE shall determine the rate or rates on the basis of the prevailing market rates, labour cost at schedule of labour rates plus 10% to cover contractor's supervision, overheads and profit and pay the CONTRACTOR accordingly. The opinion of the ENGINEER- IN-CHARGE as to current market rates of materials and the quantum of labour involved per unit of measurement will be final and binding on the CONTRACTOR.

61 Drawings to be supplied by the employer

61.1 The drawings attached with tender are only for the general guidance to the CONTRACTOR to enable him to visualize the type of work contemplated and scope of work involved. The CONTRACTOR will be deemed to have studied the DRAWINGS and formed an idea about the WORK involved.

61.2 Detailed working drawings on the basis of which actual execution of the WORK is to proceed, will be furnished from time to time during the progress of the work. The CONTRACTOR shall be deemed to have gone through the DRAWINGS supplied to him thoroughly and carefully and in conjunction with all other connected drawings and bring to the notice of the ENGINEER-IN-CHARGE discrepancies, if any, therein before actually carrying out the Work.

61.3 Copies of all detailed working drawings relating to the WORK shall be kept at the CONTRACTOR's office on the site and shall be made available to the ENGINEER-IN- CHARGE at any time during the CONTRACT. The drawings and other documents issued by the EMPLOYER shall be returned to the EMPLOYER on completion of the WORK.

62 Drawings to be supplied by the contractor:

62.1 The drawings/date which are to be furnished by the CONTRACTOR are enumerated in the special conditions of contract, and shall be furnished within the specified time.

62.2 Where approval/review of drawings before manufacture/ construction/fabrication has been specified, it shall be CONTRACTOR's responsibility to have these drawings prepared as per the directions of ENGINEER-IN-CHARGE and got approved before proceeding with manufacture/construction/fabrication as the case may be. Any change that may have become necessary in these drawings during the execution of the work shall have to be carried out by the CONTRACTOR to the satisfaction of ENGINEER-IN-CHARGE at no extra cost. All final drawings shall bear the certification stamp as indicated below duly signed by both the CONTRACTOR and ENGINEER-IN-CHARGE.

"Certified true for _____
(Name of Work)

Agreement
No._____

Signed:_____
_____
(CONTRACTOR)
(ENGINEER-IN-CHARGE)

62.3 The DRAWINGS submitted by the CONTRACTOR shall be reviewed by the ENGINEER-IN-CHARGE as far as practicable within 3 (Three) weeks and shall be modified by the CONTRACTOR, if any modifications and/or corrections are required by the ENGINEER-IN-CHARGE. The CONTRACTOR shall incorporate such modifications and/or corrections and submit the final drawings for approval. Any delays arising out of failure by the CONTRACTOR to rectify the drawing in good time shall not alter the Contract Completion Time.

62.4 As built drawings showing all corrections, adjustments etc. shall be furnished by the CONTRACTOR in six copies and one transparent for record purposed to the EMPLOYER.

63 Setting out works:

63.1 The ENGINEER-IN-CHARGE shall furnish the CONTRACTOR with only the four corners of the Works site and a level bench mark and the CONTRACTOR shall set out the Works and shall provide an efficient staff for the purpose and shall be solely responsible for the accuracy of such setting out.

63.2 The CONTRACTOR shall provide, fix and be responsible for the maintenance of all stakes, templates, level marks, profiles and other similar things and shall take all necessary precautions to prevent their removal or disturbance and shall be responsible for the consequence of such removal or disturbance should the same take place and for their

efficient and timely reinstatement. The CONTRACTOR shall also be responsible for the maintenance of all existing survey marks, boundary marks, distance marks and center line marks, either existing or supplied and fixed by the CONTRACTOR. The work shall be set out to the satisfaction of the ENGINEER-IN-CHARGE. The approval there of joining with the CONTRACTOR by the ENGINEER- IN-CHARGE in setting out the work, shall not relieve the CONTRACTOR of any of his responsibility.

63.3 Before beginning the Works, the CONTRACTOR shall at his own cost, provide all necessary reference and level posts, pegs, bamboos, flags, ranging rods, strings and other materials for proper layout of the works in accordance with the schemes for bearing marks acceptable to the ENGINEER-IN-CHARGE. The center, longitudinal or face lines and cross lines shall be marked by means of small masonry pillars. Each pillar shall have distinct mark at the centre to enable theodolite to be set over it. No work shall be started until all these points are checked and approved by the ENGINEER-IN-CHARGE in writing but such approval shall not relieve the CONTRACTOR of any of his responsibilities. The CONTRACTOR shall also provide all labour, material and other facilities, as necessary, for the proper checking of layout and inspection of the points during construction.

63.4 Pillars bearing geodetic marks located at the sites of units of WORKS under construction should be protected and fenced by the CONTRACTOR.

63.5 On completion of WORK, the CONTRACTOR must submit the geodetic documents according to which the WORK was carried out.

64 Responsibility for level and alignment:

64.1 The CONTRACTOR shall be entirely and exclusively responsible for the horizontal and vertical alignment, the levels and correctness of every part of the WORK and shall rectify effectively any errors or imperfections therein, such rectifications shall be carried out by the CONTRACTOR, at his own cost, when instructions are issued to that effect by the ENGINEER- IN-CHARGE.

65 Materials to be supplied by contractor:

65.1 The CONTRACTOR shall procure and provide within the VALUE OF CONTRACT the whole of the materials required for the construction including steels, cement and other building materials, tools, tackles, construction plant and equipment for the completion and maintenance of the WORK except the materials which will be issued by the EMPLOYER and shall make his own arrangement for procuring such materials and for the transport thereof. The EMPLOYER may give necessary recommendation to the respective authority if so desired by the CONTRACTOR but assumes no further responsibility of any nature. The EMPLOYER will insist on the procurement of materials which bear ISI stamp and/or which are supplied by reputed suppliers.

65.2 The CONTRACTOR shall properly store all materials either issued to him or brought by him to the SITE to prevent damages due to rain, wind, direct exposure to sun, etc. as also from theft, pilferage, etc. for proper and speedy execution of his works. The CONTRACTOR shall maintain sufficient stocks of all materials required by him.

65.3 No material shall be despatched from the CONTRACTOR's stores before obtaining the approval in writing of the ENGINEER-IN-CHARGE.

66 Stores supplied by the employer:

66.1 If the SPECIFICATION of the WORK provides for the use of any material of special description to be supplied from the EMPLOYER's stores or it is required that the CONTRACTOR shall use certain stores to be provided by the ENGINEER-IN-CHARGE, such materials and stores, and price to be charged there for as hereinafter mentioned being so far as practicable for the convenience of the CONTRACTOR, but not so as in any way to control the meaning or effect of the CONTRACT, the CONTRACTOR shall be bound to purchase and shall be supplied such materials and stores as are from time to time required to be used by him for the purpose of the CONTRACT only. The sums due from the CONTRACTOR for the value of materials supplied by the EMPLOYER will be recovered from the running account bill on the basis of the actual consumption of materials in the works covered and for which the running account bill has been prepared. After the completion of the WORK, however, the CONTRACTOR has to account for the full quantity of materials supplied to him as per relevant clauses in this document.

66.2 The value of the stores/materials as may be supplied to the CONTRACTOR by the EMPLOYER will be debited to the CONTRACTOR's account at the rates shown in the schedule of materials and if they are not entered in the schedule, they will be debited at cost price, which for the purpose of the CONTRACT shall include the cost of carriage and all other expenses whatsoever such as normal storage supervision charges which shall have been incurred in obtaining the same at the EMPLOYER's stores. All materials so supplied to the CONTRACTOR shall remain the absolute property of the EMPLOYER and shall not be removed on any account from the SITE of the WORK, and shall be at all times open for inspection to the ENGINEER-IN-CHARGE. Any such materials remaining unused at the time of the completion or termination of the CONTRACT shall be returned to the EMPLOYER's stores or at a place as directed by the ENGINEER-IN-CHARGE in perfectly good condition at CONTRACTOR's cost.

67 Conditions for issue of materials:

67.1 i) Materials specified as to be issued by the EMPLOYER will be supplied to the CONTRACTOR by the EMPLOYER form his stores. It shall be responsibility of the CONTRACTOR to take delivery of the materials and arrange for its loading, transport and unloading at the SITE of WORK at his own cost. The materials shall be issued between the working hours and as per the rules of the EMPLOYER as framed from time to time.

ii) The CONTRACTOR shall bear all incidental charges for the storage and safe custody of materials at site after these have been issued to him.

iii) Materials specified as to be issued by the EMPLOYER shall be issued in standard sizes as obtained from the manufacturers.

iv) The CONTRACTOR shall construct suitable Godowns at the SITE of WORK for storing the materials safe against damage by rain, dampness, fire, theft etc. He shall also employ necessary watch and ward establishment for the purpose.

v) It shall be duty of the CONTRACTOR to inspect the materials supplied to him at the time of taking delivery and satisfy himself that they are in good condition. After the materials have been delivered by the EMPLOYER, it shall be the responsibility of the CONTRACTOR to keep them in good condition and if the materials are damaged or lost, at any time, they shall be repaired and/or replaced by him at his own cost according to the instructions of the ENGINEER-IN-CHARGE.

vi) The EMPLOYER shall not be liable for delay in supply or non-supply of any materials which the EMPLOYER has undertaken to supply where such failure or delay is due to natural calamities, act of enemies, transport and procurement difficulties and any circumstances beyond the control of the EMPLOYER. In no case, the CONTRACTOR shall be entitled to claim any compensation or loss suffered by him on this account.

vii) It shall be responsibility of the CONTRACTOR to arrange in time all materials required for the WORK other than those to be supplied by the EMPLOYER. If, however, in the opinion of the ENGINEER-IN-CHARGE the execution of the WORK is likely to be delayed due to the CONTRACTOR's inability to make arrangements for supply of materials which normally he has to arrange for, the ENGINEER-IN-CHARGE shall have the right at his own discretion to issue such materials, if available with the EMPLOYER or procure the materials from the market or as elsewhere and the CONTRACTOR will be bound to take such materials at the rates decided by the ENGINEER-IN-CHARGE. This, however, does not in any way absolve the CONTRACTOR from responsibility of making arrangements for the supply of such materials in part or in full, should such a situation occur nor shall this constitute a reason for the delay in the execution of the WORK.

viii) None of the materials supplied to the CONTRACTOR will be utilised by the CONTRACTOR for manufacturing item which can be obtained as supplied from standard manufacturer in finished form.

ix) The CONTRACTOR shall, if desired by the ENGINEER- IN-CHARGE, be required to execute an Indemnity Bond in the prescribed form for safe custody and accounting of all materials issued by the EMPLOYER.

x) The CONTRACTOR shall furnish to the ENGINEER-IN- CHARGE sufficiently in advance a statement showing his requirement of the quantities of the materials to be supplied by the EMPLOYER and the time when the same will be required by him for the works, so as to enable the ENGINEER-IN-CHARGE to make necessary arrangements for procurement and supply of the material.

xi) Account of the materials issued by the EMPLOYER shall be maintained by CONTRACTOR indicating the daily receipt, consumption and balance in hand. This account shall be maintained in a manner prescribed by the ENGINEER-IN-CHARGE along with all connected papers viz. requisitions, issues, etc., and shall be always available for inspection in the CONTRACTOR's office at SITE.

xii) The CONTRACTOR should see that only the required quantities of materials are got issued. The CONTRACTOR shall not be entitled to cartage and incidental charges for returning the surplus materials, if any, to the stores wherefrom they were issued or to the place as directed by the ENGINEER-IN-CHARGE.

xiii) Materials/Equipment(s) supplied by EMPLOYER shall not be utilised for any purpose(s) than issued for.

68 Material procured with assistance of employer/return of surplus:

68.1 Notwithstanding anything contained to the contrary in any or all the clauses of this CONTRACT where any materials for the execution of the CONTRACT are procured with the assistance of the EMPLOYER either by issue from EMPLOYER's stock or purchases made under order or permits or licences issued by Government, the CONTRACTOR shall hold the said materials as trustee for the EMPLOYER and use such materials economically and solely for the purpose of the CONTRACT and not dispose them off without the permission of the EMPLOYER and return, if required by the ENGINEER-IN-CHARGE, shall determine having due regard to the condition of the materials. The price allowed to the CONTRACTOR, however, shall not exceed the amount charged to him excluding the storage charges, if any. The decision of the ENGINEER-IN-CHARGE shall be final and conclusive in such matters. In the event of breach of the aforesaid

condition, the CONTRACTOR shall, in terms of the licences or permits and/or criminal breach of trust, be liable to compensate the EMPLOYER at double rate or any higher rate, in the event of those materials at that time having higher rate or not being available in the market, then any other rate to be determined by the ENGINEER-IN-CHARGE and his decision shall be final and conclusive.

69 Materials obtained from dismantling:

69.1 If the CONTRACTOR in the course of execution of the WORK is called upon to dismantle any part for reasons other than those stipulated in Clauses 74 and 77 hereunder, the materials obtained in the WORK of dismantling etc., will be considered as the EMPLOYER's property and will be disposed off to the best advantage of the EMPLOYER.

70 Articles of value found:

70.1 All gold, silver and other minerals of any description and all precious stones, coins, treasure relics, antiquities and other similar things which shall be found in, under or upon the SITE, shall be the property of the EMPLOYER and the CONTRACTOR shall duly preserve the same to the satisfaction of the ENGINEER-IN-CHARGE and shall from time to time deliver the same to such person or persons indicated by the EMPLOYER.

71 Discrepancies between instructions:

71.1 Should any discrepancy occur between the various instructions furnished to the CONTRACTOR, his agent or staff or any doubt arises as to the meaning of any such instructions or should there be any misunderstanding between the CONTRACTOR's staff and the ENGINEER-IN- CHARGE's staff, the CONTRACTOR shall refer the matter immediately in writing to the ENGINEER-IN-CHARGE whose decision thereon shall be final and conclusive and no claim for losses alleged to have been caused by such discrepancies between instructions, doubts, or misunderstanding shall in any event be admissible.

72 Action where no specification is issued:

72.1 In case of any class of WORK for which there is no SPECIFICATION supplied by the EMPLOYER as mentioned in the Tender Documents such WORK shall be carried out in accordance with Indian Standard Specifications and if the Indian Standard Specifications do not cover the same, the WORK should be carried out as per standard Engineering Practice subject to the approval of the ENGINEER-IN-CHARGE.

73 Inspection of works:

73.1 The ENGINEER-IN-CHARGE will have full power and authority to inspect the WORK at any time wherever in progress either on the SITE or at the CONTRACTOR's premises/workshops wherever situated, premises/ workshops of any person, firm or corporation where WORK in connection with the CONTRACT may be in hand or where materials are being or are to be supplied, and the CONTRACTOR shall afford or procure for the ENGINEER-IN- CHARGE every facility and assistance to carry out such inspection. The CONTRACTOR shall, at all time during the usual working hours and at all other time at

which reasonable notice of the intention of the ENGINEER-IN- CHARGE or his representative to visit the WORK shall have been given to the CONTRACTOR, either himself be present or receive orders and instructions, or have a responsible agent duly accredited in writing, present for the purpose. Orders given to the CONTRACTOR's agent shall be considered to have the same force as if they had been given to the CONTRACTOR himself. The CONTRACTOR shall give not less than seven days notice in writing to the ENGINEER-IN-CHARGE before covering up or otherwise placing beyond reach of inspection and measurement of any work in order that the same may be inspected and measured. In the event of breach of above the same shall be uncovered at CONTRACTOR's expense for carrying out such measurement or inspection.

73.2 No material shall be despatched from the CONTRACTOR's stores before obtaining the approval in writing of the Engineer-in-Charge.

The CONTRACTOR is to provide at all time during the progress of the WORK and the maintenance period, proper means of access with ladders, gangways etc. and the necessary attendance to move and adopt as directed for inspection or measurements of the WORK by the ENGINEER- IN-CHARGE.

73.3 The CONTRACTOR shall make available to the ENGINEER-IN- CHARGE free of cost all necessary instruments and assistance in checking or setting out of WORK and in the checking of any WORK made by the CONTRACTOR for the purpose of setting out and taking measurements of WORK.

74 Tests for quality of work:

74.1 All workmanship shall be of the respective kinds described in the CONTRACT DOCUMENTS and in accordance with the instructions of the ENGINEER-IN-CHARGE and shall be subjected from time to time to such test at CONTRACTOR's cost as the ENGINEER-IN-CHARGE may direct at the place of manufacture or fabrication or on the site or at all or any such places. The CONTRACTOR shall provide assistance, instruments, labour and materials as are normally required for examining, measuring and testing any workmanship as may be selected and required by the ENGINEER-IN-CHARGE.

74.2 All the tests that will be necessary in connection with the execution of the WORK as decided by the ENGINEER- IN-CHARGE shall be carried out at the field testing laboratory of the EMPLOYER by paying the charges as decided by the EMPLOYER from time to time. In case of non- availability of testing facility with the EMPLOYER, the required test shall be carried out at the cost of CONTRACTOR at Government or any other testing laboratory as directed by ENGINEER-IN-CHARGE.

74.3 If any tests are required to be carried out in conjunction with the WORK or materials or workmanship not supplied by the CONTRACTOR, such tests shall be carried out by the CONTRACTOR as per instructions of

ENGINEER-IN-CHARGE and cost of such tests shall be reimbursed by the EMPLOYER.

75 Samples for approval:

75.1 The CONTRACTOR shall furnish to the ENGINEER-IN-CHARGE for approval, when requested or if required by the specifications, adequate samples of all materials and finished to be used in the WORK. Such samples shall be submitted before the WORK is commenced and in ample time to permit tests and examinations thereof. All materials furnished and finishes applied in actual WORK shall be fully equal to the approved samples.

76 Action and compensation in case of bad work:

76.1 If it shall appear to the ENGINEER-IN-CHARGE that any work has been executed with unsound, imperfect or unskilled workmanship, or with materials of any inferior description, or that any materials or articles provided by the CONTRACTOR for the execution of the WORK are unsound, or of a quality inferior to that contracted for, or otherwise not in accordance with the CONTRACT, the CONTRACTOR shall on demand in writing from the ENGINEER-IN-CHARGE or his authorised representative specifying the WORK, materials or articles complained of notwithstanding that the same may have been inadvertently passed, certified and paid for, forthwith rectify or remove and reconstruct the WORK so specified and provide other proper and suitable materials or articles at his own cost and in the event of failure to do so within the period specified by the ENGINEER-IN-CHARGE in his demand aforesaid, the CONTRACTOR shall be liable to pay compensation at the rate of 1 % (One percent) of the estimated cost of the whole WORK, for every week limited to a maximum of 10% (ten percent) of the value of the whole WORK, while his failure to do so shall continue and in the case of any such failure the ENGINEER-IN-CHARGE may on expiry of notice period rectify or remove and re-execute the WORK or remove and replaced with others, the materials or articles complained of to as the case may be at the risk and expense in all respects of the CONTRACTOR. The decision of the Engineering-in-charge as to any question arising under this clause shall be final and conclusive.

77 Suspension of works:

77.1 i) Subject to the provisions of sub-para (ii) of this clause, the CONTRACTOR shall, if ordered in writing by the ENGINEER-IN-CHARGE, or his representative, temporarily suspend the WORKS or any part thereof for such written order, proceed with the WORK therein ordered to be suspended until, he shall have received a written order to proceed therewith. The CONTRACTOR shall not be entitled to claim compensation for any loss or damage sustained by him by reason of temporary suspension of the WORKS aforesaid. An extension of time for completion, corresponding with the delay caused by any such suspension of the WORKS as aforesaid will be granted to the ONTRACTOR should he apply for the same provided that the suspension was not consequent to any default or failure on the part of the CONTRACTOR.

ii) In case of suspensions of entire WORK, ordered in writing by ENGINEER-IN-CHARGE, for a period of more than two months, the CONTRACTOR shall have the option to terminate the CONTRACT.

78 Employer may do part of work:

78.1 Upon failure of the CONTRACTOR to comply with any instructions given in accordance with the provisions of this CONTRACT the EMPLOYER has the alternative right, instead of assuming charge of entire WORK, to place additional labour force, tools, equipments and materials on such parts of the WORK, as the EMPLOYER may designate or also engage another CONTRACTOR to carry out the WORK. In such cases, the EMPLOYER shall deduct from the amount which otherwise might become due to the CONTRACTOR, the cost of such work and material with ten percent (10%) added to cover all departmental charges and should the total amount thereof exceed the amount due to the CONTRACTOR, the CONTRACTOR shall pay the difference to the EMPLOYER.

79 Possession prior to completion:

79.1 The ENGINEER-IN-CHARGE shall have the right to take possession of or use any completed or partially completed WORK or part of the WORK. Such possession or use shall not be deemed to be an acceptance of any work completed in accordance with the CONTRACT agreement. If such prior possession or use by the ENGINEER-IN- CHARGE delays the progress of WORK, equitable adjustment in the time of completion will be made and the CONTRACT agreement shall be deemed to be modified accordingly.

80 Defects Liability Period (Twelve months period of liability from the date of issue of completion certificate):

80.1 The CONTRACTOR shall guarantee the installation/WORK for a period of 12 months from the date of completion of WORK as certified by the ENGINEER-IN-CHARGE which is indicated in the Completion Certificate. Any damage or defect that may arise or lie undiscovered at the time of issue of Completion Certificate, connected in any way with the equipment or materials supplied by him or in the workmanship, shall be rectified or replaced by the CONTRACTOR at his own expense as deemed necessary by the ENGINEER-IN-CHARGE or in default, the ENGINEER- IN-CHARGE may carry out such works by other work and deduct actual cost incurred towards labour, supervision and materials consumables or otherwise plus 100% towards overheads (of which the certificate of ENGINEER-IN-CHARGE shall be final) from any sums that may then be or at any time thereafter, become due to the CONTRACTOR or from his Contract Performance Security, or the proceeds of sale thereof or a sufficient part on thereof.

80.2 If the CONTRACTOR feels that any variation in WORK or in quality of materials or proportions would be beneficial or necessary to fulfil the guarantees called for, he shall bring this to the notice of the ENGINEER- IN-CHARGE in writing.

If during the period of liability any portion of the WORK/equipment, is found defective and is rectified/ replaced, the period of liability for such equipment/ portion

of WORK shall be operative from the date such rectification/ replacement are carried out and Contract Performance Guarantee shall be furnished separately for the extended period of liability for that portion of WORK/ equipment only. Notwithstanding the above provisions the supplier's, guarantees/warantees for the replaced equipment shall also be passed on to the EMPLOYER.

80.3 LIMITATION OF LIABILITY

Notwithstanding anything contrary contained herein, the aggregate total liability of CONTRACTOR under the Agreement or otherwise shall be limited to 100% of Agreement / Contract Value. However, neither party shall be liable to the other party for any indirect and consequential damages, loss of profits or loss of production.

81 Care of works:

81.0 From the commencement to completion of the WORK, the CONTRACTOR shall take full responsibility for the care for all works including all temporary works and in case any damages, loss or injury shall happen to the WORK or to any part thereof or to any temporary works from any cause whatsoever, shall at his own cost repair and make good the same so that at completion the WORK shall be in good order and in conformity in every respects with the requirement of the CONTRACT and the ENGINEER-IN- CHARGE's instructions.

81.1 DEFECTS PRIOR TO TAKING OVER:

If at any time, before the WORK is taken over, the ENGINEER-IN-CHARGE shall:

a) Decide that any works done or materials used by the CONTRACTOR or by any SUB-CONTRACTOR is defective or not in accordance with the CONTRACT, or that the works or any portion thereof are defective, or do not fulfill the requirements of CONTRACT (all such matters being hereinafter, called `Defects' in this clause), and

b) As soon as reasonably practicable, gives to the CONTRACTOR notice in writing of the said decision, specifying particulars of the defects alleged to exist or to have occurred, then the CONTRACTOR shall at his own expenses and with all speed make good the defects so specified.

In case CONTRACTOR shall fail to do so, the EMPLOYER may take, at the cost of the CONTRACTOR, such steps as may in all circumstances, be reasonable to make good such defects. The expenditure so incurred by the EMPLOYER will be recovered from the amount due to the CONTRACTOR. The decision of the ENGINEER-IN-CHARGE with regard to the amount to be recovered from the CONTRACTOR will be final and binding on the CONTRACTOR. As soon as the WORK has been completed in accordance with the CONTRACT (except in minor respects that do not affect their use for the purpose

for which they are intended and except for maintenance there of provided in clause 80.1 of General Conditions of Contract) and have passed the tests on completion, the ENGINEER-IN-CHARGE shall issue a certificate (hereinafter called Completion Certificate) in which he shall certify the date on which the WORK have been so completed and have passed the said tests and the EMPLOYER shall be deemed to have taken over the WORK on the date so certified. If the WORK has been divided into various groups in the CONTRACT, the EMPLOYER shall be entitled to take over any group or groups before the other or others and there upon the ENGINEER-IN-CHARGE shall issue a Completion Certificate which will, however, be for such group or groups so taken over only. In such an event if the group /section/ part so taken over is related, to the integrated system of the work, not withstanding date of grant of Completion Certificate for group/ section/ part. The period of liability in respect of such group/ section/ part shall extend 12 (twelve) months from the date of completion of WORK.

81.2 DEFECTS AFTER TAKING OVER:

In order that the CONTRACTOR could obtain a COMPLETION CERTIFICATE he shall make good, with all possible speed, any defect arising from the defective materials supplied by the CONTRACTOR or workmanship or any act or omission of the CONTRACT or that may have been noticed or developed, after the works or groups of the works has been taken over, the period allowed for carrying out such WORK will be normally one month. If any defect be not remedied within a reasonable time, the EMPLOYER may proceed to do the WORK at CONTRACTOR's risk and expense and deduct from the final bill such amount as may be decided by the EMPLOYER.

If by reason of any default on the part of the CONTRACTOR a COMPLETION CERTIFICATE has not been issued in respect of any portion of the WORK within one month after the date fixed by the CONTRACT for the completion of the WORK, the EMPLOYER shall be at liberty to use the WORK or any portion thereof in respect of which a completion certificate has not been issued, provided that the WORK or the portion thereof so used as aforesaid shall be afforded reasonable opportunity for completing these works for the issue of Completion Certificate.

82 Guarantee/transfer of guarantee:

82.1 For works like water-proofing, acid and alkali resisting materials, pre-construction soil treatment against termite or any other specialized works etc. the CONTRACTOR shall invariably engage SUB-CONTRACTORS who are specialists in the field and firms of repute and such a SUB-CONTRACTOR shall furnish guarantees for their workmanship to the EMPLOYER, through the CONTRACTOR. In case such a SUB-CONTRACTOR/ firm is not prepared to furnish a guarantee to the EMPLOYER, the CONTRACTOR shall give that guarantee to the EMPLOYER directly.

83 Training of employer's personnel:

83.1 The CONTRACTOR undertakes to provide training to Engineering personnel selected and sent by the EMPLOYER at the works of the CONTRACTOR without any cost to the EMPLOYER. The period and the nature of training for the individual personnel shall be agreed upon mutually between the CONTRACTOR and the EMPLOYER. These engineering personnel shall be given special training at the shops, where the equipment will be manufactured and/ or in their collaborator's works and where possible, in any other plant where equipment manufactured by the CONTRACTOR or his collaborators is under installation or test to enable those personnel to become familiar with the equipment being furnished by the CONTRACTOR. EMPLOYER shall bear only the to and fro fare of the said engineering personnel.

84 Replacement of defective parts and materials:

84.1 If during the progress of the WORK, EMPLOYER shall decide and inform in writing to the CONTRACTOR, that the CONTRACTOR has manufactured any plant or part of the plant unsound or imperfect or has furnished plant inferior to the quality specified, the CONTRACTOR on receiving details of such defects or deficiencies shall at his own expenses within 7 (seven) days of his receiving the notice, or otherwise within such time as may be reasonably necessary for making it good, proceed to alter, re-construct or remove such work and furnish fresh equipments upto the standards of the specifications. In case the CONTRACTOR fails to do so, EMPLOYER may on giving the CONTRACTOR 7 (seven) day's notice in writing of his intentions to do so, proceed to remove the portion of the WORK so complained of and at the cost of CONTRACTOR's, perform all such works or furnish all such equipments provided that nothing in the clause shall be deemed to deprive the EMPLOYER of or affect any rights under the CONTRACT, the EMPLOYER may otherwise have in respect of such defects and deficiencies.

84.2 The CONTRACTOR's full and extreme liability under this clause shall be satisfied by the payments to the EMPLOYER of the extra cost, of such replacements procured including erection/installation as provided for in the CONTRACT; such extra cost being the ascertained difference between the price paid by the EMPLOYER for such replacements and the CONTRACT price portion for such defective plants and repayments of any sum paid by the EMPLOYER to the CONTRACTOR in respect of such defective plant. Should the EMPLOYER not so replace the defective plant the CONTRACTOR's extreme liability under this clause shall be limited to the repayment of all such sums paid by the EMPLOYER under the CONTRACT for such defective plant.

85 Indemnity

85.1 If any action is brought before a Court, Tribunal or any other Authority against the Employer or an officer or agent of the EMPLOYER, for the failure, omission or neglect on the part of the CONTRACTOR to perform any acts, matters, covenants or things under the CONTRACT, or damage or injury caused by the alleged omission or negligence on the part of the CONTRACTOR, his agents, representatives or his SUB- CONTRACTOR's, or in

connection with any claim based on lawful demands of SUB-CONTRACTOR's workmen suppliers or employees, the CONTRACTOR, shall in such cases indemnify and keep the EMPLOYER and/or their representatives harmless from all losses, damages, expenses or decrees arising out of such action.

86 Construction aids, equipments, tools & tackles:

86.1 CONTRACTOR shall be solely responsible for making available for executing the WORK, all requisite CONSTRUCTION EQUIPMENTS, Special Aids, Barges, Cranes and the like, all Tools, Tackles and Testing Equipment and Appliances, including imports of such equipment etc. as required. In case of import of the same the rates applicable for levying of Custom Duty on such Equipment, Tools, & Tackles and the duty drawback applicable thereon shall be ascertained by the CONTRACTOR from the concerned authorities of Government of India. It shall be clearly understood that EMPLOYER shall not in any way be responsible for arranging to obtain Custom Clearance and/or payment of any duties and/or duty draw backs etc. for such equipments so imported by the CONTRACTOR and the CONTRACTOR shall be fully responsible for all taxes, duties and documentation with regard to the same. Tenderer in his own interest may contact, for any clarifications in the matter, concerned agencies/Dept./Ministries of Govt. of India. All clarifications so obtained and interpretations thereof shall be solely the responsibility of the CONTRACTOR.

SECTION-VI CERTIFICATES AND PAYMENTS

87 Schedule of rates and payments:

87.1 i) <u>CONTRACTOR'S REMUNERATION:</u>

The price to be paid by the EMPLOYER to CONTRACTOR for the whole of the WORK to be done and for the performance of all the obligations undertaken by the CONTRACTOR under the CONTRACT DOCUMENTS shall be ascertained by the application of the respective Schedule of Rates (the inclusive nature of which is more particularly defined by way of application but not of limitation, with the succeeding sub-clause of this clause) and payment to be made accordingly for the WORK actually executed and approved by the ENGINEER-IN-CHARGE. The sum so ascertained shall (excepting only as and to the extent expressly provided herein) constitute the sole and inclusive remuneration of the CONTRACTOR under the CONTRACT and no further or other payment whatsoever shall be or become due or payable to the CONTRACTOR under the CONTRACT.

ii) SCHEDULE OF RATES TO BE INCLUSIVE:

The prices/rates quoted by the CONTRACTOR shall remain firm till the issue of FINAL CERTIFICATE and shall not be subject to escalation. Schedule of Rates shall be deemed to include and cover all costs, expenses and liabilities of every description and all risks of every kind to be taken in executing, completing and handing over the WORK to the EMPLOYER by the CONTRACTOR. The CONTRACTOR shall be deemed to have known the nature, scope, magnitude and the extent of the WORK and materials required though the CONTRACT DOCUMENT may not fully and precisely furnish them. Tenderer's shall make such provision in the Schedule of Rates as he may consider necessary to cover the cost of such items of WORK and materials as may be reasonable and necessary to complete the WORK. The opinion of the ENGINEER-IN-CHARGE as to the items of WORK which are necessary and reasonable for COMPLETION OF WORK shall be final and binding on the CONTRACTOR, although the same may not be shown on or described specifically in CONTRACT DOCUMENTS.

Generality of this present provision shall not be deemed to cut down or limit in any way because in certain cases it may and in other cases it may not be expressly stated that the CONTRACTOR shall do or perform a work or supply articles or perform services at his own cost or without addition of payment or without extra charge or words to the same effect or that it may be stated or not stated that the same are included in and covered by the Schedule of Rates.

iii) SCHEDULE OF RATES TO COVER CONSTRUCTION EQUIPMENTS, MATERIALS, LABOUR ETC.:

Without in any way limiting the provisions of the preceding sub-clause the Schedule of Rates shall be deemed to include and cover the cost of all construction equipment, temporary WORK (except as provided for herein), pumps, materials, labour, insurance, fuel, consumables, stores and appliances to be supplied by the CONTRACTOR and all other matters in connection with each item in the Schedule of Rates and the execution of the WORK or any portion thereof finished, complete in every respect and maintained as shown or described in the CONTRACT DOCUMENTS or as may be ordered in writing during the continuance of the CONTRACT.

iv) SCHEDULE OF RATES TO COVER ROYALTIES, RENTS AND CLAIMS:

The Schedule of Rates (i.e., VALUE OF CONTRACT) shall be deemed to include and cover the cost of all royalties and fees for the articles and processes,

protected by letters, patent or otherwise incorporated in or used in connection with the WORK, also all royalties, rents and other payments in connection with obtaining materials of whatsoever kind for the WORK and shall include an indemnity to the EMPLOYER which the CONTRACTOR hereby gives against all actions, proceedings, claims, damages, costs and expenses arising from the incorporation in or use on the WORK of any such articles, processes or materials, octroi or other municipal or local Board Charges, if levied on materials, equipment or machineries to be brought to site for use on WORK shall be borne by the CONTRACTOR.

v) SCHEDULE OF RATES TO COVER TAXES AND DUTIES:

No exemption or reduction of Customs Duties, Excise Duties, Sales Tax, Sales Tax on works Contract quay or any port dues, transport charges, stamp duties or Central or State Government or local Body or Municipal Taxes or duties, taxes or charges (from or of any other body), whatsoever, will be granted or obtained, all of which expenses shall be deemed to be included in and covered by the Schedule or Rates. The CONTRACTOR shall also obtain and pay for all permits or other privileges necessary to complete the WORK.

vi) SCHEDULE OF RATES TO COVER RISKS OF DELAY:

The Schedule of Rates shall be deemed to include and cover the risk of all possibilities of delay and interference with the CONTRACTOR's conduct of WORK which occur from any causes including orders of the EMPLOYER in the exercise of his power and on account of extension of time granted due to various reasons and for all other possible or probable causes of delay.

vii) SCHEDULE OF RATES CANNOT BE ALTERED:

For WORK under unit rate basis, no alteration will be allowed in the Schedule of Rates by reason of works or any part of them being modified, altered, extended, diminished or committed. The Schedule of Rates are fully inclusive of rates which have been fixed by the CONTRACTOR and agreed to by the EMPLOYER and cannot be altered.

For lumpsum CONTRACTS, the payment will be made according to the WORK actually carried out, for which purpose an item wise, or work wise Schedule of Rates shall be furnished, suitable for evaluating the value of WORK done and preparing running account bill.
Payment for any additional work which is not covered in the Schedule of Rates, shall only be released on issuance of change order.

88 Procedure for measurement and billing of work in progress:

88.1 BILLING PROCEDURE:

Following procedures shall be adopted for billing of works executed by the CONTRACTOR.

88.1.1 All measurements shall be recorded in sextuplicate on standard measurement sheets supplied by EMPLOYER and submitted to EMPLOYER/CONSULTANT for scrutiny and passing.

88.1.2 EMPLOYER/CONSULTANT shall scrutinise and check the measurements recorded on the sheets and shall certify correctness of the same on the measurement sheets.

88.1.3 ENGINEER-IN-CHARGE shall pass the bills after carrying out the comprehensive checks in accordance with the terms and conditions of the CONTRACTS, within 7 days of submission of the bills, complete in all respects and send the same to the Employer to effect payment to the CONTRACTOR.

88.1.4 GAIL shall make all endeavour to make payments of undisputed amount of the bills submitted based on the joint measurements within 15 (Fifteen) days from the date of certification by the Engineer-in-Charge.

88.1.5 Measurements shall be recorded as per the methods of measurement spelt out in EMPLOYER/CONSULTANT SPECIFICATIONS / CONTRACT DOCUMENT. EMPLOYER/CONSULTANT shall be fully responsible for checking the measurements quantitatively and qualitatively as recorded in the Measurement Books/ Bills.

88.1.6 While preparing the final bills overall measurements will not be taken again. Only volume of work executed since the last measured bill alongwith summary of final measurements will be considered for the final bill. However, a detailed check shall be made as to missing measurements and in case there are any missing items or measurements the same shall be recorded.

88.1.7 COMPUTERISED BILLING SYSTEM : GAIL (India) Limited has introduced Computerised Billing System whereby when the Bills are submitted in GAIL by a Contractor, a receipt number is generated. The Contractor can know the status of the Bill through GAIL's website.

88.2 SECURED ADVANCE ON MATERIAL:

Unless otherwise provided elsewhere in the tender, no `Secured Advance' on security of materials brought to site for execution of contracted items(s) shall be paid to the Contractor whatsoever.

88.3 DISPUTE IN MODE OF MEASUREMENT:

In case of any dispute as to the mode of measurement not covered by the CONTRACT to be adopted for any item of WORK, mode of measurement as per latest Indian Standard Specifications shall be followed.

88.4 ROUNDING-OFF OF AMOUNTS:

In calculating the amount of each item due to the CONTRACTOR in every certificate prepared for payment, sum of less than 50 paise shall be omitted and the total amount on each certificate shall be rounded off to the nearest rupees, i.e., sum of less than 50 paise and more upto one rupee shall be reckoned as one rupee.

89 Lumpsum in tender:

89.1 The payment against any Lumpsum item shall be made only on completion of that item as per the provision of the CONTRACT after certification by ENGINEER-IN-CHARGE.

90 Running account payments to be regarded as advance:

90.1 All running account payments shall be regarded as payment by way of advance against the final payment only and not as payments for WORK actually done and completed and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be removed and taken away and reconstructed or re-erected or be considered as an admission of the due performance of the CONTRACT, or any part thereof, in this respect, or of the accurring of any claim by the CONTRACTOR, nor shall it conclude, determine or affect in any way the powers of the EMPLOYER under these conditions or any of them as to the final settlement and adjustment of the accounts or otherwise, or in any other way vary or affect the CONTRACT. The final bill shall be submitted by the CONTRACTOR within one month of the date of physical completion of the WORK, otherwise, the ENGINEER-IN-CHARGE's certificate of the measurement and of total amount payable for the WORK accordingly shall be final and binding on all parties

91 Notice of claims for additional payments:

91.1 Should the CONTRACTOR consider that he is entitled to any extra payment for any extra/additional WORKS or MATERIAL change in original SPECIFICATIONS carried out by him in respect of WORK he shall forthwith give notice in writing to the ENGINEER-IN-CHARGE that he claims extra payment. Such notice shall be given to the ENGINEER-IN-CHARGE upon which CONTRACTOR bases such claims and such notice shall contain full particulars of the nature of such claim with full details of amount claimed. Irrespective of any provision in the CONTRACT to the contrary, the CONTRACTOR must intimate his intention to lodge claim on the EMPLOYER within 10 (ten) days of the commencement of happening of the event and quantify the claim within 30 (thirty) days, failing which the CONTRACTOR will lose his right to claim any compensation/reimbursement/damages etc. or refer the matter to arbitration. Failure on the part of CONTRACTOR to put forward any claim without the necessary particulars as above within the time above specified shall be an absolute waiver thereof. No omission by EMPLOYER to reject any such claim and no delay in dealing therewith shall be waiver by EMPLOYER of any of this rights in respect thereof.

91.2 ENGINEER-IN-CHARGE shall review such claims within a reasonably period of time and cause to discharge these in a manner considered appropriate after due deliberations thereon. However, CONTRACTOR shall be obliged to carry

on with the WORK during the period in which his claims are under consideration by the EMPLOYER, irrespective of the outcome of such claims, where additional payments for WORKS considered extra are justifiable in accordance with the CONTRACT provisions, EMPLOYER shall arrange to release the same in the same manner as for normal WORK payments. Such of the extra works so admitted by EMPLOYER shall be governed by all the terms, conditions, stipulations and specifications as are applicable for the CONTRACT. The rates for extra works shall generally be the unit rates provided for in the CONTRACT. In the event unit rates for extra works so executed are not available as per CONTRACT, payments may either be released on day work basis for which daily/hourly rates for workmen and hourly rates for equipment rental shall apply, or on the unit rate for WORK executed shall be derived by interpolation/ extrapolation of unit rates already existing in the CONTRACT. In all the matters pertaining to applicability of rate and admittance of otherwise of an extra work claim of CONTRACTOR the decision of ENGINEER-IN-CHARGE shall be final and binding.

92 Payment of contractor's bill:

92.1 No payment shall be made for works estimated to cost less than Rs.10,000/- till the whole of the work shall have been completed and a certificate of completion given. But in case of works estimated to cost more than Rs.10,000/-, that CONTRACTOR on submitting the bill thereof be entitled to receive a monthly payment proportionate to the part thereof approved and passed by the ENGINEER-IN-CHARGE, whose certificate of such approval and passing of the sum so payable shall be final and conclusive against the CONTRACTOR. This payment will be made after making necessary corrections/deductions as stipulated elsewhere in the CONTRACT DOCUMENT for materials, Contract Performance Security, taxes etc.

92.2 Payment due to the CONTRACTOR shall be made by the EMPLOYER by Account Payee cheque forwarding the same to registered office or the notified office of the CONTRACTOR. In no case will EMPLOYER be responsible if the cheque is mislaid or misappropriated by unauthorised person/persons. In all cases, the CONTRACTOR shall present his bill duly pre-receipted on proper revenue stamp payment shall be made in Indian Currency.

92.3 In general payment of final bill shall be made to CONTRACTOR within 60 days of the submission of bill on joint measurements, after completion of all the obligations under the CONTRACT.

93 Receipt for payment:

93.1 Receipt for payment made on account of work when executed by a firm, must be signed by a person holding due power of attorney in this respect on behalf of the CONTRACTOR, except when the CONTRACTOR's are described in their tender as a limited company in which case the receipts must be signed in the name of the company by one of its principal officers or by some other person having authority to give effectual receipt for the company.

94 Completion certificate:

94.1 APPLICATION FOR COMPLETION CERTIFICATE:

When the CONTRACTOR fulfils his obligation under Clause 81.1 he shall be eligible to apply for COMPLETION CERTIFICATE.

The ENGINEER-IN-CHARGE shall normally issue to the CONTRACTOR the COMPLETION CERTIFICATE within one month after receiving any application therefore from the CONTRACTOR after verifying from the completion documents and satisfying himself that the WORK has been completed in accordance with and as set out in the construction and erection drawings, and the CONTRACT DOCUMENTS.

The CONTRACTOR, after obtaining the COMPLETION CERTIFICATE, is eligible to present the final bill for the WORK executed by him under the terms of CONTRACT.

94.2 COMPLETION CERTIFICATE:

Within one month of the completion of the WORK in all respects, the CONTRACTOR shall be furnished with a certificate by the ENGINEER-IN-CHARGE of such completion, but no certificate shall be given nor shall the WORK be deemed to have been executed until all scaffolding, surplus materials and rubbish is cleared off the SITE completely nor until the WORK shall have been measured by the ENGINEER-IN-CHARGE whose measurement shall be binding and conclusive. The WORKS will not be considered as complete and taken over by the EMPLOYER, until all the temporary works, labour and staff colonies are cleared to the satisfaction of the ENGINEER-IN-CHARGE.

If the CONTRACTOR fails to comply with the requirements of this clause on or before the date fixed for the completion of the WORK, the ENGINEER-IN-CHARGE may at the expense of the CONTRACTOR remove such scaffolding, surplus materials and rubbish and dispose off the same as he thinks fit and clean off such dirt as aforesaid, and the CONTRACTOR shall forthwith pay the amount of all expenses so incurred and shall have no claim in respect of any such scaffolding or surplus materials as aforesaid except for any sum actually realised by the sale thereof.

94.3 COMPLETION CERTIFICATE DOCUMENTS:

For the purpose of Clause 94.0 the following documents will be deemed to form the completion documents:

i) The technical documents according to which the WORK was carried out.

ii) Six (6) sets of construction drawings showing therein the modification and correction made during the course of execution and signed by the ENGINEER-IN-CHARGE.

iii) COMPLETION CERTIFICATE for `embedded' and `covered' up work.

iv) Certificates of final levels as set out for various works.

v) Certificates of tests performed for various WORKS.

vi) Material appropriation, Statement for the materials issued by the EMPLOYER for the WORK and list of surplus materials returned to the EMPLOYER's store duly supported by necessary documents.

95 Final decision and final certificate:

95.1 Upon expiry of the period of liability and subject to the ENGINEER-IN-CHARGE being satisfied that the WORKS have been duly maintained by the CONTRACTOR during monsoon or such period as hereinbefore provided in Clause 80 & 81 and that the CONTRACTOR has in all respect duly made-up any subsidence and performed all his obligations under the CONTRACT, the ENGINEER-IN- CHARGE shall (without prejudice to the rights of the EMPLOYER to retain the provisions of relevant Clause hereof) otherwise give a certificate herein referred to as the FINAL CERTIFICATE to that effect and the CONTRACTOR shall not be considered to have fulfilled the whole of his obligations under CONTRACT until FINAL CERTIFICATE shall have been given by the ENGINEER-IN- CHARGE notwithstanding any previous entry upon the WORK and taking possession, working or using of the same or any part thereof by the EMPLOYER.

96 Certificate and payments on evidence of completion:

96.1 Except the FINAL CERTIFICATE, no other certificates or payments against a certificate or on general account shall be taken to be an admission by the EMPLOYER of the due performance of the CONTRACT or any part thereof or of occupancy or validity of any claim by the CONTRACTOR.

97 Deductions from the contract price:

97.1 All costs, damages or expenses which EMPLOYER may have paid or incurred, which under the provisions of the CONTRACT, the CONTRACTOR is liable/will be liable, will be claimed by the EMPLOYER. All such claims shall be billed by the EMPLOYER to the CONTRACTOR regularly as and when they fall due. Such claims shall be paid by the CONTRACTOR within 15 (fifteen) days of the receipt of the corresponding bills and if not paid by the CONTRACTOR within the said period, the EMPLOYER may, then, deduct the amount from any moneys due i.e., Contract Performance Security or becoming due to the CONTRACTOR under the CONTRACT or may be recovered by actions of law or otherwise, if the CONTRACTOR fails to satisfy the EMPLOYER of such claims.

SECTION-VII TAXES AND INSURANCE

98 Taxes, Duties, Octroi etc:

98.1 The CONTRACTOR agrees to and does hereby accept full and exclusive liability for the payment of any and all Taxes, Duties, including Excise duty, octroi etc. now or hereafter imposed, increased, modified, all the sales taxes, duties, octrois etc. now in force and hereafter increased, imposed or modified, from time to time in respect of WORKS and materials and all contributions and taxes for unemployment compensation, insurance and old age pensions or annuities

now or hereafter imposed by any Central or State Government authorities which are imposed with respect to or covered by the wages, salaries, or other compensations paid to the persons employed by the CONTRACTOR and the CONTRACTOR shall be responsible for the compliance of all SUB-CONTRACTORS, with all applicable Central, State, Municipal and local law and regulation and requirement of any Central, State or local Government agency or authority. CONTRACTOR further agrees to defend, indemnify and hold EMPLOYER harmless from any liability or penalty which may be imposed by the Central, State or Local authorities by reason or any violation by CONTRACTOR or SUB-CONTRACTOR of such laws, suits or proceedings that may be brought against the EMPLOYER arising under, growing out of, or by reason of the work provided for by this CONTRACT, by third parties, or by Central or State Government authority or any administrative sub-division thereof.

Tax deductions will be made as per the rules and regulations in force in accordance with acts prevailing from time to time.

99 Sales tax/Turnover tax:

99.1 Tenderer should quote all inclusive prices including the liability of Sales Tax/Turnover Tax whether on the works contract as a whole or in respect of bought out components used by the CONTRACTOR in execution of the CONTRACT. EMPLOYER shall not be responsible for any such liability of the CONTRACTOR in respect of this CONTRACT.

100 Statutory variations

100.1 Tenderer should quote prices inclusive of excise-duty and sales tax applicable on finished product. Any statutory variations in Excise Duty and sales tax on finished product during the contractual completion period, shall be to the Employer's account for which the Contractor will furnish documentary evidence(s) in support of their claims to GAIL. However, any increase in the rate of these taxes and duties (E.D. and S.T.) beyond the contractual completion period shall be to Contractor's account and any decrease shall be passed on to GAIL.

101 Insurance:

101.1 GENERAL

CONTRACTOR shall at his own expense arrange secure and maintain insurance with reputable insurance companies to the satisfaction of the EMPLOYER as follows:

CONTRACTOR at his cost shall arrange, secure and maintain insurance as may be necessary and to its full value for all such amounts to protect the WORKS in progress from time to time and the interest of EMPLOYER against all risks as detailed herein. The form and the limit of such insurance, as defined here in together with the under works thereof in each case should be as acceptable to the EMPLOYER. However, irrespective of work acceptance the responsibility to maintain adequate insurance coverage at all times during the period of CONTRACT shall be that of CONTRACTOR alone. CONTRACTOR's failure in this regard shall not relieve him of any of his responsibilities and obligations under CONTRACT.

Any loss or damage to the equipment, during ocean transportation, port/custom clearance, inland and port handling, inland transportation, storage, erection and commissioning till such time the WORK is taken over by EMPLOYER, shall be to the account of CONTRACTOR. CONTRACTOR shall be responsible for preferring of all claims and make good for the damage or loss by way of repairs and/or replacement of the parts of the Work damaged or lost. CONTRACTOR shall provide the EMPLOYER with a copy of all insurance policies and documents taken out by him in pursuance of the CONTRACT. Such copies of document shall be submitted to the EMPLOYER immediately upon the CONTRACTOR having taken such insurance coverage. CONTRACTOR shall also inform the EMPLOYER at least 60(Sixty) days in advance regarding the expiry cancellation and/or changes in any of such documents and ensure revalidation/renewal etc., as may be necessary well in time.

Statutory clearances, if any, in respect of foreign supply required for the purpose of replacement of equipment lost in transit and/or during erection, shall be made available by the EMPLOYER. CONTRACTOR shall, however, be responsible for obtaining requisite licences, port clearances and other formalities relating to such import. The risks that are to be covered under the insurance shall include, but not be limited to the loss or damage in handling, transit, theft, pilferage, riot, civil commotion, weather conditions, accidents of all kinds, fire, war risk (during ocean transportation only) etc. The scope of such insurance shall cover the entire value of supplies of equipments, plants and materials to be imported from time to time.

All costs on account of insurance liabilities covered under CONTRACT will be to CONTRACTOR's account and will be included in VALUE OF CONTRACT. However, the EMPLOYER may from time to time, during the currency of the CONTRACT, ask the CONTRACTOR in writing to limit the insurance coverage risk and in such a case, the parties to the CONTRACT will agree for a mutual settlement, for reduction in VALUE OF CONTRACT to the extent of reduced premium amounts.

CONTRACTOR as far as possible shall cover insurance with Indian Insurance Companies, including marine Insurance during ocean transportation.

i) EMPLOYEES STATE INSURANCE ACT:

The CONTRACTOR agrees to and does hereby accept full and exclusive liability for the compliance with all obligations imposed by the Employee State Insurance Act 1948 and the CONTRACTOR further agrees to defend, indemnify and hold EMPLOYER harmless for any liability or penalty which may be imposed by the Central, State or Local authority by reason of any asserted violation by CONTRACTOR or SUB-CONTRACTOR of the Employees' State Insurance Act, 1948, and also from all claims, suits or

proceeding that may be brought against the EMPLOYER arising under, growing out of or by reasons of the work provided for by this CONTRACTOR, by third parties or by Central or State Government authority or any political sub- division thereof.

The CONTRACTOR agrees to fill in with the Employee's State Insurance Corporation, the Declaration Forms, and all forms which may be required in respect of the CONTRACTOR's or SUB- CONTRACTOR's employees, who are employed in the WORK provided for or those covered by ESI from time to time under the Agreement. The CONTRACTOR shall deduct and secure the agreement of the SUB- CONTRACTOR to deduct the employee's contribution as per the first schedule of the Employee's State Insurance Act from wages and affix the Employees Contribution Card at wages payment intervals. The CONTRACTOR shall remit and secure the agreement of SUB-CONTRACTOR to remit to the State Bank of India, Employee's State Insurance Corporation Account, the Employee's contribution as required by the Act. The CONTRACTOR agrees to maintain all cards and Records as required under the Act in respect of employees and payments and the CONTRACTOR shall secure the agreement of the SUB- CONTRACTOR to maintain such records. Any expenses incurred for the contributions, making contributions or maintaining records shall be to the CONTRACTOR's or SUB-CONTRACTOR's account.

The EMPLOYER shall retain such sum as may be necessary from the total VALUE OF CONTRACT until the CONTRACTOR shall furnish satisfactory proof that all contributions as required by the Employees State Insurance Act, 1948, have been paid. This will be pending on the CONTRACTOR when the ESI Act is extended to the place of work.

ii) <u>WORKMEN COMPENSATION AND EMPLOYER'S LIABILITY INSURANCE:</u>

Insurance shall be effected for all the CONTRACTOR's employees engaged in the performance of this CONTRACT. If any of the work is sublet, the CONTRACTOR shall require the SUB-CONTRACTOR to provide workman's Compensation and employer's liability insurance for the later's employees if such employees are not covered under the CONTRACTOR's Insurance.

iii) <u>ACCIDENT OR INJURY TO WORKMEN:</u>

The EMPLOYER shall not be liable for or in respect of any damages or compensation payable at law in respect or in consequence of any accident or injury to any workman or other person in the Employment of the CONTRACTOR or any SUB-CONTRACTOR save and except an accident or injury resulting from any act or

default of the EMPLOYER, his agents or servants and the CONTRACTOR shall indemnify and keep indemnified the EMPLOYER against all such damages and compensation (save and except and aforesaid) and against all claims, demands, proceeding, costs, charges and expenses, whatsoever in respect or in relation thereto.

iv) TRANSIT INSURANCE

In respect of all items to be transported by the CONTRACTOR to the SITE of WORK, the cost of transit insurance should be borne by the CONTRACTOR and the quoted price shall be inclusive of this cost.

v) COMPREHENSIVE AUTOMOBILE INSURANCE

This insurance shall be in such a form as to protect the Contractor against all claims for injuries, disability, disease and death to members of public including EMPLOYER's men and damage to the property of others arising from the use of motor vehicles during on or off the `site' operations, irrespective of the Employership of such vehicles.

vi) COMPREHENSIVE GENERAL LIABILITY INSURANCE

a) This insurance shall protect the Contractor against all claims arising from injuries, disabilities, disease or death of member of public or damage to property of others due to any act or omission on the part of the Contractor, his agents, his employees, his representatives and Sub-Contractor's or from riots, strikes and civil commotion.

b) Contractor shall take suitable Group Personal Accident Insurance Cover for taking care of injury, damage or any other risks in respect of his Engineers and other Supervisory staff who are not covered under Employees State Insurance Act.

c) The policy shall cover third party liability. The third party (liability shall cover the loss/ disablement of human life (person not belonging to the Contractor) and also cover the risk of damage to others materials/ equipment/ properties during construction, erection and commissioning at site. The value of third party liability for compensation for loss of human life or partial/full disablement shall be of required statutory value but not less than Rs. 2 lakhs per death, Rs. 1.5 lakhs per full disablement and Rs. 1 lakh per partial disablement and shall nevertheless cover such compensation as may be awarded by Court by Law in India and cover for damage to others equipment/ property as approved by the Purchaser. However, third party risk shall be maximum to Rs. 10(ten) lakhs to death.

d) The Contractor shall also arrange suitable insurance to cover damage, loss, accidents, risks etc., in respect of all his plant, equipments and machinery, erection tools & tackles and all other temporary attachments brought by him at site to execute the work.

e) The Contractor shall take out insurance policy in the joint name of EMPLOYER and Contractor from one or more nationalised insurance company from any branch office at Project site.

f) Any such insurance requirements as are hereby established as the minimum policies and coverages which Contractor must secure and keep in force must be complied with, Contrator shall at all times be free to obtain additional or increased coverages at Contractor's sole expenses.

vii) <u>ANY OTHER INSURANCE REQUIRED UNDER LAW OR REGULATIONS OR BY EMPLOYER:</u>

CONTRACTOR shall also carry and maintain any and all other insurance(s) which he may be required under any law or regulation from time to time without any extra cost to EMPLOYER. He shall also carry and maintain any other insurance which may be required by the EMPLOYER.

102 Damage to Property or to any Person or any Third Party

102.1 i) CONTRACTOR shall be responsible for making good to the satisfaction of the EMPLOYER any loss or any damage to structures and properties belonging to the EMPLOYER or being executed or procured or being procured by the EMPLOYER or of other agencies within in the premises of all the work of the EMPLOYER, if such loss or damage is due to fault and/or the negligence or willful acts or omission of the CONTRACTOR, his employees, agents, representatives or SUB-CONTRACTORs.

ii) The CONTRACTOR shall take sufficient care in moving his plants, equipments and materials from one place to another so that they do not cause any damage to any person or to the property of the EMPLOYER or any third party including overhead and underground cables and in the event of any damage resulting to the property of the EMPLOYER or of a third party during the movement of the aforesaid plant, equipment or materials the cost of such damages including eventual loss of production, operation or services in any plant or establishment as estimated by the EMPLOYER or ascertained or demanded by the third party shall be borne by the CONTRACTOR. Third party liability risk shall be Rupees One lakh for single accident and limited to Rupees Ten lakhs.

iii) The CONTRACTOR shall indemnify and keep the EMPLOYER harmless of all claims for damages to property other than EMPLOYER's property arising

under or by reason of this agreement, if such claims result from the fault and/or negligence or willful acts or omission of the CONTRACTOR, his employees, agents, representative of SUB-CONTRACTOR.

SECTION-VIII LABOUR LAWS

103 Labour laws:

103.1 i) No labour below the age of 18 (eighteen) years shall be employed on the WORK.

ii) The CONTRACTOR shall not pay less than what is provided under law to labourers engaged by him on the WORK.

iii) The CONTRACTOR shall at his expense comply with all labour laws and keep the EMPLOYER indemnified in respect thereof.

iv) The CONTRACTOR shall pay equal wages for men and women in accordance with applicable labour laws.

v) If the CONTRACTOR is covered under the Contract labour (Regulation and Abolition) Act, he shall obtain a licence from licensing authority (i.e. office of the labour commissioner) by payment of necessary prescribed fee and the deposit, if any, before starting the WORK under the CONTRACT. Such fee/deposit shall be borne by the CONTRACTOR.

vi) The CONTRACTOR shall employ labour in sufficient numbers either directly or through SUB- CONTRACTOR's to maintain the required rate of progress and of quality to ensure workmanship of the degree specified in the CONTRACT and to the satisfaction of the ENGINEER-IN-CHARGE.

vii) The CONTRACTOR shall furnish to the ENGINEER-IN- CHARGE the distribution return of the number and description, by trades of the work people employed on the works. The CONTRACTOR shall also submit on the 4th and 19th of every month to the ENGINEER-IN-CHARGE a true statement showing in respect of the second half of the preceding month and the first half of the current month (1) the accidents that occurred during the said fortnight showing the circumstances under which they happened and the extent of damage and injury caused by them and (2) the number of female workers who have been allowed Maternity Benefit as provided in the Maternity Benefit Act 1961 on Rules made thereunder and the amount paid to them.

viii) The CONTRACTOR shall comply with the provisions of the payment of Wage Act 1936, Employee Provident

Fund Act 1952, Minimum Wages Act 1948. Employers Liability Act 1938. Workmen's Compensation Act 1923, Industrial Disputes Act 1947, the Maternity Benefit Act 1961 and Contract Labour Regulation and Abolition Act 1970, Employment of Children Act 1938 or any modifications thereof or any other law relating thereto and rules made thereunder from time to time.

ix) The ENGINEER-IN-CHARGE shall on a report having been made by an Inspecting Officer as defined in Contract Labour (Regulation and Abolition) Act 1970 have the power to deduct from the money due to the CONTRACTOR any sum required or estimated to be required for making good the loss suffered by a worker or workers by reason of non- fulfillment of the Conditions of the Contract for the benefit of workers, non-payment of wages or of deductions made from his or their wages which are not justified by the terms of the Contract or non-observance of the said regulations.

x) The CONTRACTOR shall indemnify the EMPLOYER against any payments to be made under and for the observance of the provisions of the aforesaid Acts without prejudice to his right to obtain indemnity from his SUB-CONTRACTOR's. In the event of the CONTRACTOR committing a default or breach of any of the provisions of the aforesaid Acts as amended from time to time, of furnishing any information or submitting or filling and Form/ Register/ Slip under the provisions of these Acts which is materially incorrect then on the report of the inspecting Officers, the CONTRACTOR shall without prejudice to any other liability pay to the EMPLOYER a sum not exceeding Rs.50.00 as Liquidated Damages for every default, breach or furnishing, making, submitting, filling materially incorrect statement as may be fixed by the ENGINEER-IN- CHARGE and in the event of the CONTRACTOR's default continuing in this respect, the Liquidated Damages may be enhanced to Rs.50.00 per day for each day of default subject to a maximum of one percent of the estimated cost of the WORK put to tender. The ENGINEER-IN-CHARGE shall deduct such amount from bills or Contract Performance Security of the CONTRACTOR and credit the same to the Welfare Fund constitute under these acts. The decision of the ENGINEER-IN-CHARGE in this respect shall be final and binding.

104 Implementation of Apprentices Act, 1961:

104.1 The CONTRACTOR shall comply with the provisions of the Apprentices Act, 1961 and the Rules and Orders issued thereunder from time to time. If he fails to do so, his failure will be a breach of the CONTRACT and the ENGINEER-IN-CHARGE may, at his discretion, cancel the CONTRACT. The CONTRACTOR shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions, of the Act.

105 Contractor to indemnify the Employer:

105.1 i) The CONTRACTOR shall indemnify the EMPLOYER and every member, office and employee of the EMPLOYER, also the ENGINEER-IN-CHARGE and his staff against all actions, proceedings, claims, demands, costs and expenses whatsoever arising out of or in connection with the matters referred to in Clause 102.0 and elsewhere and all actions, proceedings, claims, demands, costs and expenses which may be made against the EMPLOYER for or in respect of or arising out of any failure by the CONTRACTOR in the performance of his obligations under the CONTRACT DOCUMENT. The EMPLOYER shall not be liable for or in respect of or arising out of any failure by the CONTRACTOR in the performance of his obligations under the CONTRACT DOCUMENT. The EMPLOYER shall not be liable for or in respect of any demand or compensation payable by law in respect or in consequence of any accident or injury to any workmen or other person. In the employment of the CONTRACTOR or his SUB-CONTRACTOR the CONTRACTOR shall indemnify and keep indemnified the EMPLOYER against all such damages and compensations and against all claims, damages, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

ii) PAYMENT OF CLAIMS AND DAMAGES:

Should the EMPLOYER have to pay any money in respect of such claims or demands as aforesaid the amount so paid and the costs incurred by the EMPLOYER shall be charged to and paid by the CONTRACTOR and the CONTRACTOR shall not be at liberty to dispute or question the right of the EMPLOYER to make such payments notwithstanding the same, may have been made without the consent or authority or in law or otherwise to the contrary.

iii) In every case in which by virtue of the provisions of Section 12, Sub-section (i) of workmen's compensation Act, 1923 or other applicable provision of Workmen Compensation Act or any other Act, the EMPLOYER is obliged to pay compensation to a workman employed by the CONTRACTOR in execution of the WORK, the EMPLOYER will recover from the CONTRACTOR the amount of the compensation so paid, and without prejudice to the rights of EMPLOYER under Section 12, Sub- section (2) of the said act, EMPLOYER shall be at liberty to recover such amount or any part thereof by deducting it from the Contract Performance Security or from any sum due to the CONTRACTOR whether under this CONTRACT or otherwise. The EMPLOYER shall not be bound to contest any claim made under Section 12, Sub-section (i) of the said act, except on the written request of the CONTRACTOR and upon his giving to the EMPLOYER full security for all costs for which the EMPLOYER might become liable in consequence of contesting such claim.

106 Health and sanitary arrangements for workers:

106.1 In respect of all labour directly or indirectly employed in the WORKS for the performance of the CONTRACTOR's part of this agreement, the CONTRACTOR shall comply with or cause to be complied with all the rules and regulations of the local sanitary and other authorities or as framed by the EMPLOYER from time to time for the protection of health and sanitary arrangements for all workers.

106.2 The CONTRACTOR shall provide in the labour colony all amenities such as electricity, water and other sanitary and health arrangements. The CONTRACTOR shall also provide necessary surface transportation to the place of work and back to the colony for their personnel accommodated in the labour colony.

SECTION-IX APPLICABLE LAWS AND SETTLEMENT OF DISPUTES

107 Arbitration:

107.1 Unless otherwise specified, the matters where decision of the Engineer-in-Charge is deemed to be final and binding as provided in the Agreement and the issues/disputes which cannot be mutually resolved within a reasonable time, all disputes shall be referred to arbitration by Sole Arbitrator.

The Employer [GAIL (India) Ltd.] shall suggest a panel of three independent and distinguished persons to the bidder/contractor/supplier/buyer (as the case may be) to select any one among them to act as the Sole Arbitrator.

In the event of failure of the other parties to select the Sole Arbitrator within 30 days from the receipt of the communication suggesting the panel of arbitrators, the right of selection of the sole arbitrator by the other party shall stand forfeited and the EMPLOYER (GAIL) shall have discretion to proceed with the appointment of the Sole Arbitrator. The decision of Employer on the appointment of the sole arbitrator shall be final and binding on the parties.

The award of sole arbitrator shall be final and binding on the parties and unless directed/awarded otherwise by the sole arbitrator, the cost of arbitration proceedings shall be shared equally by the parties. The Arbitration proceedings shall be in English language and venue shall be New Delhi, India.

Subject to the above, the provisions of (Indian) Arbitration & Conciliation ACT 1996 and the Rules framed there under shall be applicable. All matter relating to this contract are subject to the exclusive jurisdiction of the court situated in the state of Delhi.

Bidders/suppliers/contractors may please note that the Arbitration & Conciliation Act 1996 was enacted by the

Indian Parliament and is based on United Nations Commission on International Trade Law (UNCITRAL model law), which were prepared after extensive consultation with Arbitral Institutions and centers of International Commercial Arbitration. The United Nations General Assembly vide resolution 31/98 adopted the UNCITRAL Arbitration rules on 15 December 1976.

107.2 FOR THE SETTLEMENT OF DISPUTES BETWEEN GOVERNMENT DEPARTMENT AND ANOTHER AND ONE GOVERNMENT DEPARTMENT AND PUBLIC ENTERPRISE AND ONE PUBLIC ENTERPRISE AND ANOTHER THE ARBITRATION SHALL BE AS FOLLOWS:

"In the event of any dispute or difference between the parties hereto, such dispute or difference shall be resolved amicably by mutual consultation or through the good offices of empowered agencies of the Government. If such resolution is not possible, then, the unresolved dispute or difference shall be referred to arbitration of an arbitrator to be nominated by Secretary, Department of Legal Affairs ("Law Secretary") in terms of the Office Memorandum No.55/3/1/75-CF, dated the 19th December 1975 issued by the Cabinet Secretariat (Department of Cabinet Affairs), as modified from time to time. The Arbitration Act 1940 (10 of 1940) shall not be applicable to the arbitration under this clause. The award of the Arbitrator shall be binding upon parties to the dispute. Provided, however, any party aggrieved by such award may make a further reference for setting aside or revision of the award to Law Secretary whose decision shall bind the parties finally and conclusively.

108 Jurisdiction:

108.1 The CONTRACT shall be governed by and constructed according to the laws in force in INDIA. The CONTRACTOR hereby submits to the jurisdiction of the Courts situated at DELHI for the purposes of disputes, actions and proceedings arising out of the CONTRACT, the courts at DELHI only will have the jurisdiction to hear and decide such disputed, actions and proceedings.

SECTION-X SAFETY CODES

109 General:

109.1 CONTRACTOR shall adhere to safe construction practice and guard against hazardous, and unsafe working conditions and shall comply with EMPLOYER's safety rules as set forth herein. Prior to start of construction, CONTRACTOR will be furnished copies of EMPLOYER's "Safety Code" for information and guidance, if it has been prepared.

110 Safety regulations:

110.1 i) In respect of all labour, directly employed in the WORK for the performance of CONTRACTOR's part

of this agreement, the CONTRACTOR shall at his own expense arrange for all the safety provisions as per safety codes of C.P.W.D., Indian Standards Institution. The Electricity Act, The Mines Act and such other acts as applicable.

ii) The CONTRACTOR shall observe and abide by all fire and safety regulations of the EMPLOYER. Before starting construction work CONTRACTOR shall consult with EMPLOYER's safety Engineers or ENGINEER- IN-CHARGE and must make good to the satisfaction of the EMPLOYER any loss or damage due to fire to any portion of the work done or to be done under this agreement or to any of the EMPLOYER's existing property.

111 First aid and industrial injuries:

111.1 i) CONTRACTOR shall maintain first aid facilities for its employees and those of its SUB-CONTRACTOR.

ii) CONTRACTOR shall make outside arrangements for ambulance service and for the treatment of industrial injuries. Names of those providing these services shall be furnished to EMPLOYER prior to start of construction and their telephone numbers shall be prominently posted in CONTRACTOR's field office.

ii) All critical industrial injuries shall be reported promptly to EMPLOYER, and a copy of CONTRACTOR's report covering each personal injury requiring the attention of a physician shall be furnished to the EMPLOYER.

112 General rules:

112.1 Smoking within the battery area, tank farm or dock limits is strictly prohibited. Violators of the no smoking rules shall be discharged immediately.

113 Contractor's barricades:

113.1 i) CONTRACTOR shall erect and maintain barricades required in connection with his operation to guard or protect:-

a) Excavations
b) Hoisting Areas.
c) Areas adjudged hazardous by CONTRACTOR's or EMPLOYER's inspectors.
d) EMPLOYER's existing property subject to damage by CONTRACTOR's Operations.
e) Rail Road unloading spots.

ii) CONTRACTOR's employees and those of his SUB- CONTRACTOR's shall become acquainted with EMPLOYER's barricading practice and shall respect the provisions thereof.

iii) Barricades and hazardous areas adjacent to, but not located in normal routes of travel shall be marked by red flasher lanterns at nights.

114 Scaffolding:

114.1 i) Suitable scaffolding should be provided for workmen for all works that cannot safely be done from the ground or from solid construction except such short period work as can be done safely from ladders. When a ladder is

used an extra Mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying material as well, suitable footholds and handholds shall be provided on the ladder and the ladder shall be given an inclination not steeper than 1 in 4 (1 horizontal and 4 vertical).

ii) Scaffolding or staging more than 4 metres above the ground or floor, swing suspended from an overhead support or erected with stationary support shall have a guard rail properly attached, bolted, braced and otherwise retarded at least one metre high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.

iii) Working platform, gangway and stairway should be so constructed that they should not sag unduly or unequally and if the height of platform of the gangway or the stairway is more than 4 metres above the ground level or floor level, they should be closely boarded, should have adequate width and should be suitably fastened as in ii) above.

iv) Every opening in the floor of a building or in a working platform shall be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing of railing whose minimum heights shall be 1 metre.

v) Safe-means of access shall be provided to all working platforms and other working places, every ladder shall be securely fixed. No portable single ladder shall be over 9 metres in length while the width between side rails in rung ladder shall in no case be less than 30 cms for ladder upto and including 3 metres in length. For longer ladder this width should be increased 5mm for each additional foot of length. Uniform steps spacing shall not exceed 30 cms. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites or work shall be so stacked or placed to cause danger or inconvenience to any person or public. The CONTRACTOR shall also provide all necessary fencing and lights to protect the workers and staff from accidents, and shall be bound to bear the expenses of defense of every suit, action or other proceeding of law that may be brought by any person for injury sustained owing to neglect of the above precautions and pay any damages and costs which may be awarded in any such suit or action or proceeding to any such person or which may with the consent of the CONTRACTOR be paid to compromise any claim by any such person.

115 Excavation and trenching:

115.1 All trenches 1.2 metres or more in depth, shall at all times be supplied with at least one ladder for each 50 metres length or fraction thereof.

Ladder shall be extended from bottom of the trenches to atleast 1 metre above the surface of the ground. The sides of the trenches which are 1.5M in depth shall be stepped back to give suitable slope or securely held by timber bracing, so as to avoid the danger of sides to collapse. The excavated materials shall not be placed within 1.5 metres of the edge of the trench or half of the trench width whichever is more. Cutting shall be done from top to bottom. Under no circumstances undermining or under-cutting shall be done.

116 Demolition/general safety:

116.1 i) Before any demolition work is commenced and also during the progress of the demolition work

a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.

b) No electric cable or apparatus which is liable to be a source of danger shall remain electrically charged.

c) All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.

ii) All necessary personal safety equipment as considered adequate by the ENGINEER-IN-CHARGE, should be kept available for the use of the persons employed on the SITE and maintained in condition suitable for immediate use, and the CONTRACTOR shall take adequate steps to ensure proper use of equipment by those concerned.

a) Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective gloves.

b) Those engaged in white washing and mixing or stacking or cement bags or any material which are injurious to the eyes be provided with protective goggles.

c) Those engaged in welding and cutting works shall be provided with protective face & eye shield, hand gloves, etc.

d) Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.

e) When workers are employed in sewers and manholes, which are in use, the CONTRACTOR shall ensure that the manhole covers are opened and are ventilated atleast for an hour before the workers are allowed to get into the manholes, and the manholes so opened shall be cordoned off with

suitable railing and provided with warning signals or board to prevent accident to the public.

f) The CONTRACTOR shall not employ men below the age of 18 years and women on the work of painting with products containing lead in any form. Wherever men above the age of 18 years are employed on the work of lead painting, the following precautions should be taken.

1) No paint containing lead or lead product shall be used except in the form of paste or readymade paint.

2) Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scrapped.

3) Overalls shall be supplied by the CONTRACTOR to the workmen and adequate facilities shall be provided to enable the working painters to wash them during and on cessation of work.

iii) When the work is done near any place where there is risk of drowning, all necessary safety equipment should be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision should be made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.

iv) Use of hoisting machines and tackles including their attachments, anchorage and supports shall conform to the following standards or conditions:

a) These shall be of good mechanical construction, sound materials and adequate strength and free from patent defect and shall be kept in good working order.

b) Every rope used in hoisting or lowering materials or as means of suspension shall be of durable quality and adequate strength and free from patent defects.

c) Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years should be in charge of any hoisting machine including any scaffolding, winch or give signals to the operator.

d) In case of every hoisting machine and of every chain ring hook, shackle, swivel, and pulley block used in hoisting or lowering or as means of suspension, the safe working load shall be ascertained by adequate means. Every hoisting machine and all gears referred to above shall be plainly marked with the safe working load of the

conditions under which it is applicable and the same shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond safe working load except for the purpose of testing.

e) In case of departmental machine, the safe working load shall be notified by the ENGINEER-IN-CHARGE. As regards CONTRACTOR's machines, the CONTRACTOR shall notify the safe working load of the machine to the ENGINEER-IN-CHARGE whenever he brings any machinery to SITE of WORK and get it verified by the Engineer concerned.

v) Motors, gears, transmission lines, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards. Hoisting appliances should be provided with such means as to reduce to minimum the accidental descent of the load, adequate precautions should be taken to reduce the minimum risk of any part or parts of a suspended load becoming accidentally displaced. When workers are employed on electrical installations which are already energised, insulating mats, wearing apparel, such as gloves, sleeves, and boots as may be necessary should be provided. The workers shall not wear any rings, watches and carry keys or other materials which are good conductors of electricity.

vi) All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe conditions and no scaffolds, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near places of work.

vii) These safety provisions should be brought to the notice of all concerned by displaying on a notice board at a prominent place at the work-spot. The person responsible for compliance of the safety code shall be named therein by the CONTRACTOR.

viii) To ensure effective enforcement of the rules and regulations relating to safety precautions, the arrangements made by the CONTRACTOR shall be open to inspection by the Welfare Officer, ENGINEER-IN- CHARGE or safety Engineer of the Administration or their representatives.

ix) Notwithstanding the above clauses there is nothing in these to exempt the CONTRACTOR for the operations of any other Act or rules in force in the Republic of India. The work throughout including any temporary works shall be carried out in such a manner as not to interfere in any way whatsoever with the traffic on any roads or footpath at the site or in the vicinity thereto or any existing works whether the property of the Administration or of a third party.

In addition to the above, the CONTRACTOR shall abide by the safety code provision as per C.P.W.D. Safety code and Indian Standard Safety Code from time to time.

117 Care in handling inflammable gas:

117.1 The CONTRACTOR has to ensure all precautionary measures and exercise utmost care in handling the inflammable gas cylinder/inflammable liquids/paints etc. as required under the law and/or as advised by the fire Authorities of the EMPLOYER.

118 Temporary combustible structures:

118.1 Temporary combustible structures will not be built near or around work site.

119 Precautions against fire:

119.1 The CONTRACTOR will have to provide Fire Extinguishers, Fire Buckets and drums at worksite as recommended by ENGINEER-IN-CHARGE. They will have to ensure all precautionary measures and exercise utmost care in handling the inflammable gas cylinders/ inflammable liquid/ paints etc. as advised by ENGINEER-IN-CHARGE. Temporary combustible structures will not be built near or around the work-site.

120 Explosives:

120.1 Explosives shall not be stored or used on the WORK or on the SITE by the CONTRACTOR without the permission of the ENGINEER-IN-CHARGE in writing and then only in the manner and to the extent to which such permission is given. When explosives are required for the WORK they will be stored in a special magazine to be provided at the cost of the CONTRACTOR in accordance with the Explosives Rules. The CONTRACTOR shall obtain the necessary licence for the storage and the use of explosives and all operations in which or for which explosives are employed shall be at sole risk and responsibility of the CONTRACTOR and the CONTRACTOR shall indemnify the EMPLOYER against any loss or damage resulting directly or indirectly therefrom.

121 Mines act:

121.1 SAFETY CODE: The CONTRACTOR shall at his own expense arrange for the safety provisions as required by the ENGINEER-IN-CHARGE in respect of all labour directly employed for performance of the WORKS and shall provide all facilities in connection therewith. In case the CONTRACTOR fails to make arrangements and provides necessary facilities as aforesaid, the ENGINEER-IN- CHARGE shall be entitled to do so and recover the costs thereof from the CONTRACTOR.

121.2 Failure to comply with Safety Code or the provisions relating to report on accidents and to grant of maternity benefits to female workers shall make the CONTRACTOR liable to pay Company Liquidated Damages an amount not exceeding Rs.50/- for each default or materially incorrect statement. The decision of the ENGINEER-IN-CHARGE in such matters based on reports from the Inspecting Officer or from representatives of ENGINEER-IN-CHARGE shall be final and binding and deductions for recovery of such Liquidated Damages may be made from any amount payable to the CONTRACTOR from all the provisions of

the Mines Act, 1952 or any statutory modifications or re-enactment thereof the time being in force and any Rules and Regulations made thereunder in respect of all the persons employed by him under this CONTRACT and shall indemnify the EMPLOYER from and against any claim under the Mines Act or the rules and regulations framed thereunder by or on behalf of any persons employed by him or otherwise.

122 Preservation of place:

122.1 The CONTRACTOR shall take requisite precautions and use his best endeavours to prevent any riotous or unlawful behaviour by or amongst his worker and others employed or the works and for the preservation of peace and protection of the inhabitants and security of property in the neighborhood of the WORK. In the event of the EMPLOYER requiring the maintenance of a Special Police Force at or in the vicinity of the site during the tenure of works, the expenses thereof shall be borne by the CONTRACTOR and if paid by the EMPLOYER shall be recoverable from the CONTRACTOR.

123 Outbreak of infectious diseases:

123.1 The CONTRACTOR shall remove from his camp such labour and their facilities who refuse protective inoculation and vaccination when called upon to do so by the ENGINEER-IN-CHARGE's representative. Should Cholera, Plague or other infectious diseases break out the CONTRACTOR shall burn the huts, beddings, clothes and other belongings or used by the infected parties and promptly erect new huts on healthy sites as required by the ENGINEER-IN-CHARGE failing which within the time specified in the Engineer's requisition, the work may be done by the EMPLOYER and the cost thereof recovered from the CONTRACTOR.

124 Use of intoxicants:

124.1 The unauthorised sale of spirits or other intoxicants, beverages upon the work in any of the buildings, encampments or tenements owned, occupied by or within the control of the CONTRACTOR or any of his employee is forbidden and the CONTRACTOR shall exercise his influence and authority to the utmost extent to secure strict compliance with this condition.

In addition to the above, the CONTRACTOR shall abide by the safety code provision as per C.P.W.D. safety code and Indian Standard Code framed from time to time.

PROFORMA OF INDEMNITY BOND FOR SUPPLY OF MATERIALS BY EMPLOYER

(To be executed on non-judicial stamped paper of appropriate value)

WHEREAS GAIL (INDIA) LTD. (hereinafter referred to as GAIL) which expression shall unless repugnant to the context includes their legal representatives, successors and assigns having their registered office at 16, Bhikaiji Cama Place; R.K.Puram New Delhi has entered into a CONTRACT with _____ (hereinafter referred to as the CONTRACTOR which expression shall unless repugnant to the context include their legal representatives, successors and assigns) for _____on the terms and conditions as set out, inter-alia, in the CONTRACT No..... Dated..... and various documents forming part thereof hereinafter collectively referred to as the "CONTRACT" which expression shall include all amendments, modifications and/or variations thereto.

AND WHEREAS

i) GAIL has agreed to supply to the CONTRACTOR, equipment, plants and materials (finished, semi-finished and raw)for the purpose of EXECUTION of the said CONTRACT by the CONTRACTOR (the equipment, plants and materials to be supplied by GAIL to the CONTRACTOR, hereinafter for the sake of brevity referred to as the "said materials") and pending execution by the CONTRACTOR of the CONTRACT incorporating the said materials, the said materials shall be under the custody and charge of the CONTRACTOR and shall be kept, stored, altered, worked upon and/or fabricated at the sole risk and expense of the CONTRACTOR.

ii) As a pre-condition to the supply of the said materials by GAIL to the CONTRACTOR, GAIL has required the CONTRACTOR to furnish to GAIL an Indemnity Bond in the manner and upon terms and conditions hereinafter indicated.

NOW, THEREFORE, in consideration of the premises aforesaid the CONTRACTOR hereby irrevocably and unconditionally undertakes to indemnify and keep indemnified GAIL from and against all loss, damage and destruction (inclusive but not limited to any or all loss or damage or destruction to or of the said materials or any item or part thereof by theft, pilferage, fire, flood, storm, tempest, lightning, explosion, storage, chemical or physical action or reaction, binding, warping, exposure, rusting, faulty workmanship, faulty fabrication, or faulty method or technique of fabrication, strike, riot, civil commotion, or other act or omission or commission whatsoever within or beyond the control of the CONTRACTOR, misuse and misappropriation (inclusive but not limited to the misuse or misappropriation by the CONTRACTOR and the Contractor's servants and/or agents) whatsoever to, or of in the said materials or any part of them thereof from the date that the same or relative part of item thereof was supplied to the CONTRACTOR upto and until the date of return to GAIL of the said materials or relative part of item thereof or completed fabricated works(s) incorporating the said material and undertake to pay to GAIL forthwith on demand in writing without protest or demur the value as specified by GAIL of the said material or item or part

thereof, lost, damaged, destroyed, misused and/or misappropriated, as the case may be or, together with GAIL'S costs and expenses (inclusive of but not limited to handling, transportation, cartage, insurance, freight, packing and inspection costs/or expenses upto) and aggregate limit of Rs._____ (Rupees _____ _____Only).

AND THE CONTRACTOR hereby agrees with GAIL that:

i) This Indemnity/Undertaking shall be a continuing Indemnity/ Undertaking and shall remain valid and irrevocable for all claims of GAIL arising hereunder upto and until the midnight of _____. However, if the CONTRACT for which this Indemnity/Undertaking is given is not completed by this date, the CONTRACTOR hereby agrees to extend the Indemnity/Undertaking till such time as is required to fulfil the CONTRACT.

ii) This Indemnity/Undertaking shall not be determined by any change in constitution or upon insolvency of the CONTRACTOR but shall be in all respects and for all purposes be binding and operative until payment of all moneys payable to GAIL in terms of hereof.

iii) The mere statement of allegation made by or on behalf of GAIL in any notice or demand or other writing addressed to the CONTRACTOR as to any of the said material or item or part thereof having been lost , damaged, destroyed, misused or misappropriated while in the custody of the CONTRACTOR and/or prior to completion of the completed fabricated work(s) and delivery to job site thereof incorporating the said materials shall be conclusive of the factum of the said material or item or part thereof having been supplied to the CONTRACTOR and/or the loss, damage, destruction, misuse or misappropriation thereof, as the case may be, while in the custody of the CONTRACTOR and/or prior to the completion of the completed fabricated work(s) and delivery to job site thereof incorporating the said materials without necessity on the part of GAIL to produce any documentary proof or other evidence whatsoever in support of this.

iv) The amount stated in any notice of demand addressed by GAIL to the CONTRACTOR as to the value of such said materials lost, damaged, destroyed, misused or misappropriated, inclusive relative to the costs and expenses incurred by GAIL in connection therewith shall be conclusive of the value of such said materials and the said cost and expenses as also of the amount liable to be paid to GAIL to produce any voucher, bill or other documentation or evidence whatsoever in support thereof and such amount shall be paid without any demur and on demand and no dispute shall be raised concerning the same.

The undersigned has full power to execute this Indemnity Bond on behalf of the CONTRACTOR under the Power of Attorney dated_____.

(SIGNED BY COMPETENT AUTHORITY)

Place:

Dated:

Official seal of the CONTRACTOR

PROFORMA FOR CONTRACT AGREEMENT

LOA No. GAIL / Dated ----------

Contract Agreement for the work of ---------- of GAIL (INDIA) Ltd. made on -------- between (Name and Address)---------- , hereinafter called the "CONTRACTOR" (which term shall unless excluded by or repugnant to the subject or context include its successors and permitted assignees) of the one part and GAIL (INDIA) LIMITED hereinafter called the "EMPLOYER" (which term shall, unless excluded by or repugnant to the subject or context include its successors and assignees) of the other part.

WHEREAS

A. The EMPLOYER being desirous of having provided and executed certain work mentioned, enumerated or referred to in the Tender Documents including Letter Inviting Tender, General Tender Notice, General Conditions of Contract, Special Conditions of Contract, Specifications, Drawings, Plans, Time Schedule of completion of jobs, Schedule of Rates, Agreed Variations, other documents has called for Tender.

B. The CONTRACTOR has inspected the SITE and surroundings of WORK specified in the Tender Documents and has satisfied himself by careful examination before submitting his tender as to the nature of the surface, strata, soil, sub-soil and ground, the form and nature of site and local conditions, the quantities, nature and magnitude of the work, the availability of labour and materials necessary for the execution of work, the means of access to SITE, the supply of power and water thereto and the accommodation he may require and has made local and independent enquiries and obtained complete information as to the matters and thing referred to, or implied in the tender documents or having any connection therewith and has considered the nature and extent of all probable and possible situations, delays, hindrances or interferences to or with the execution and completion of the work to be carried out under the CONTRACT, and has examined and considered all other matters, conditions and things and probable and possible contingencies, and generally all matters incidental thereto and ancillary thereof affecting the execution and completion of the WORK and which might have influenced him in making his tender.

C. The Tender Documents including the Notice Letter Inviting Tender, General Conditions of Contract, Special Conditions of Contract, Schedule of Rates, General Obligations, SPECIFICATIONS, DRAWINGS, PLANS, Time Schedule for completion of Jobs, Letter of Acceptance of Tender and any statement of agreed variations with its enclosures copies of which are hereto annexed form part of this CONTRACT though separately set out herein and are included in the expression "CONTRACT" wherever herein used.

AND WHEREAS

The EMPLOYER accepted the Tender of the CONTRACTOR for the provision and the execution of the said WORK at the rates stated in the schedule of quantities of the work and finally approved by EMPLOYER (hereinafter called the "Schedule of Rates") upon the terms and subject to the conditions of CONTRACT.

NOW THIS AGREEMENT WITNESSETH AND IT IS HEREBY AGREED AND DECLARED AS FOLLOWS:-

1. In consideration of the payment to be made to the CONTRACTOR for the WORK to be executed by him, the CONTRACTOR hereby covenants with EMPLOYER that the CONTRACTOR shall and will duly provide, execute and complete the said work and shall do and perform all other acts and things in the CONTRACT mentioned or described or which are to be implied there from or may be reasonably necessary for the completion of the said WORK and at the said times and in the manner and subject to the terms and conditions or stipulations mentioned in the contract.

2. In consideration of the due provision execution and completion of the said WORK, EMPLOYER does hereby agree with the CONTRACTOR that the EMPLOYER will pay to the CONTRACTOR the respective amounts for the WORK actually done by him and approved by the EMPLOYER at the Schedule of Rates and such other sum payable to the CONTRACTOR under provision of CONTRACT, such payment to be made at such time in such manner as provided for in the CONTRACT.

A N D

3. In consideration of the due provision, execution and completion of the said WORK the CONTRACTOR does hereby agree to pay such sums as may be due to the EMPLOYER for the services rendered by the EMPLOYER to the CONTRACTOR, such as power supply, water supply and others as set for in the said CONTRACT and such other sums as may become payable to the EMPLOYER towards the controlled items of consumable materials or towards loss, damage to the EMPLOYER'S equipment, materials construction plant and machinery, such payments to be made at such time and in such manner as is provided in the CONTRACT.

   It is specifically and distinctly understood and agreed between the EMPLOYER and the CONTRACTOR that the CONTRACTOR shall have no right, title or interest in the SITE made available by the EMPLOYER for execution of the works or in the building, structures or work executed on the said SITE by the CONTRACTOR or in the goods, articles, materials etc., brought on the said SITE (unless the same specifically belongs to the CONTRACTOR) and the CONTRACTOR shall not have or deemed to have any lien whatsoever charge for unpaid bills will not be entitled to assume or retain possession or control of the SITE or structures and the EMPLOYER shall have an absolute and unfettered right to take full possession of SITE and to remove the CONTRACTOR, their servants, agents and materials belonging to the CONTRACTOR and lying on the SITE.

The CONTRACTOR shall be allowed to enter upon the SITE for execution of the WORK only as a licensee simpliciter and shall not have any claim, right, title or interest in the SITE or the structures erected thereon and the EMPLOYER shall be entitled to terminate such license at any time without assigning any reason.

The materials including sand, gravel, stone, loose, earth, rock etc., dug up or excavated from the said SITE shall, unless otherwise expressly agreed under this CONTRACT, exclusively belong to the EMPLOYER and the CONTRACTOR shall have no right to claim over the same and such excavation and materials should be disposed off on account of the EMPLOYER according to the instruction in writing issued from time to time by the ENGINEER-IN-CHARGE.

In Witness whereof the parties have executed these presents in the day and the year first above written.

Signed and Delivered for and on
on behalf of EMPLOYER.

GAIL (INDIA) LIMITED

_____

_____

Date :_____

Place:_____

Signed and Delivered for and
on behalf of the CONTRACTORs.

(NAME OF THE CONTRACTOR)

_____

_____

Date :_____

Place:_____

IN PRESENCE OF TWO WITNESSES

1._____

_____

_____

2._____

_____

_____

1. _____

_____

_____

2. _____

_____

_____

MODIFICATION TO GENERAL CONDITIONS OF CONTRACT

MODIFICATION TO GCC

The GCC attached with this bidding document are now modified to the following extent. Subject to these modifications, all other terms and conditions of GCC shall remain unaltered.

SL. NO.	GCC Clause	GCC Page	TITLE	Modification /Addition /Deletion
1.	107 of GCC	65 of GCC	General Conditions of Contract(GCC)- Section-IX :Applicable Laws and Settlement of Disputes	Article 107 (Arbitration) of Section-IX of GCC stands modified to the following extent: i) GAIL (India) Limited has framed the Conciliation Rules 2010 in conformity with supplementary to Part-III of the Indian Arbitration and Conciliation Act 1996 for speedier, cost effective and amicable settlement of disputes through conciliation. A copy of the said rules made available on GAIL's web site www.gailonline.com for reference. Unless otherwise specified, the matters where decision of the Engineer-in-Charge is deemed to be final and binding as provided in the Agreement and the issues/ disputes which cannot be mutually resolved within a reasonable time, all disputes shall be settled in accordance with the Conciliation Rules 2010. ii) Any dispute(s)/ difference(s)/ issue(s) of any kind whatsoever between/ amongst the Parties arising under/ out of/in connection with this contract shall be settled in accordance with the afore said rules. iii) In case of any dispute(s)/ difference(s)/ issue(s), a Party shall notify the other Party(ies) in writing about such a dispute(s)/ difference(s)/ issue(s) between/ amongst the Parties and that such a Party wishes to refer the dispute(s)/ difference(s)/ issue(s) to Conciliation. Such invitation for Conciliation shall contain sufficient information as to the dispute(s)/ difference(s)/ issue(s) to enable the other Party(ies) to be fully informed as to the nature of the dispute(s)/ difference(s)/ issue(s), the amount of monetary claim, if any, and apparent cause(s) of action. iv) Conciliation proceedings commence when the other Party(ies) accept(s) the invitation to conciliate and confirmed in writing. If the other Party(ies) reject(s) the invitation, there will be no conciliation proceedings. v) If the Party initiating conciliation does not receive a reply within thirty days from the date on which he/she sends the invitation, or within such other period of

SL. NO.	GCC Clause	GCC Page	TITLE	Modification /Addition /Deletion
				time as specified in the invitation, he/she may elect to treat this as a rejection of the invitation to conciliate. If he/she so elects, he/she shall inform the other Party(ies) accordingly. vi) Where Invitation for Conciliation has been furnished, the Parties shall attempt to settle such dispute(s) amicably under Part-III of the Indian Arbitration and Conciliation Act, 1996 and GAIL (India) Limited Conciliation Rules, 2010. It would be only after exhausting the opti on of Conciliation as an Alternate Dispute Resolution Mechanism that the Parties hereto shall go for Arbitration. For the purpose of this clause, the option of `Conciliation' shall be deemed to have been exhausted, even in case of rejection of `Conciliation' by any of the Parties. vii) The cost of Conciliation proceedings including but not limited to fees for Conciliator(s), Airfare, Local Transport, Accommodation, cost towards conference facility etc. shall be borne by the Parties equally. viii) The Parties shall freeze claim(s) of interest, if any, and shall not claim the same during the pendency of Conciliation proceedings. The Settlement Agreement, as and when reached/agreed upon, shall be signed between the Parties and Conciliation proceedings shall stand terminated on the date of the Settlement Agreement.
2.	--	--	--	The Employer/Company's/OWNER name GAIL (India) Ltd. or GAIL where ever appearing in the General Conditions of Contract shall be read as "Brahmaputra Cracker and Polymer Limited" or BCPL having their registered office at Hotel Brahmaputra Ashok, M G Road, Guwahati-781001 (Assam). The Project office is located at Main Fire Station, Site- Lepetkata, Post- Barbaruah, Distt.-Dibrugarh – 786007, Assam.
3.	6	10	Earnest Money	The Demand Draft/ Banker's Cheque/ Bank Guarantee to be submitted by the bidders in lieu of Earnest Money Deposit as given in the Bidding Document shall be drawn in favour of "**Brahmaputra Cracker and Polymer Limited**" payable at Dibrugarh in Assam.

SL. NO.	GCC Clause	GCC Page	TITLE	Modification /Addition /Deletion
4.	36 of GCC	25 of GCC	Contractor's subordinate staff and their conduct	Following New Sub-Clause No. 36.5 is added: "36.5 The Contractor shall obtain necessary certificate with regard to verification of character and antecedents in respect of personnel deployed/ proposed to be deployed to carry out the contractual obligations and provide the copy of the said certificate for facilitating Photo Pass to enter into BCPL's premises."
5.	19 of (GCC)	27 of GCC	**PRICE REDUCTION SCHEDULE(PRS):**	I. Under clause no 27.1 of GCC the Word "WORK" appearing in the second line shall be read as "SUB WORK" II. Under clause no 27.1 of GCC the words' total contract price' appearing in line nos. 5,6 and 7 shall be read as 'Total Price for individual "SUB WORK"
6.	60 of GCC	35	**ALTERATIONS IN SPECIFICATIONS DESIGN AND EXTRA WORKS**	Sub Clause no 60.2 I(e) under the title (I For Item Rate Contract) stands deleted.
7.	80 of GCC	45	**DEFECTS LIABILITY PERIOD (TWELVE MONTHS PERIOD OF LIABILITY FROM THE DATE OF ISSUE OF COMPLETION CERTIFICATE):**	The defect liability for the individual Sub work shall be applicable from the date of completion of individual "sub-work " as above in line with clause no. 80 of GCC.
8.	24 Of GCC	17	**CONTRACT PERFORMANCE SECURITY:**	Following Sub clause . No 24.6 shall be added after Sub clause .No. 24.5 Contractor shall furnish CPBG for 10% of the of total estimated contract value for the performance of whole contract , CPBG amount shall not be governed by the individual assigned sub-works.

(STAMP AND SIGNATURE OF BIDDER)

FORMATS

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ANNEXURE-I

PROFORMA OF BANK GUARANTEE
FOR CONTRACT PERFORMANCE SECURITY (UNCONDITIONAL)

(ON NON-JUDICIAL PAPER OF APPROPRIATE VALUE)

M/s. Brahmaputra Cracker and Polymer Ltd.,
(Address as applicable)

Dear Sirs,

M/s. _____ having registered office at _____ (hereinafter called the "CONTRACTOR" which expression shall wherever the context so require include its successors and assignees) have been awarded the work of _____ for Brahmaputra Cracker and Polymer Ltd, Guwahati, Assam.

The Contract conditions provide that the CONTRACTOR shall pay a sum of Rs._____ (Rupees _____ only) as Initial/full Contract Performance Security in the form therein mentioned. The form of payment of Contract Performance Security includes guarantee executed by Nationalised Bank, undertaking full responsibility to indemnify Brahmaputra Cracker and Polymer Ltd, Guwahati Assam. (Hereinafter called "OWNER" which expression shall wherever the context so require, include its successors and assignees) in case of default.

The said _____ has approached the BANK (hereinafter called "BANK", which expression shall wherever the context so require include its successors and assignees) and at their request and in consideration of the premises, we, having our office at _____ have agreed to give such guarantee as hereinafter mentioned.

1. We _____ hereby undertake to give the irrevocable and unconditional guarantee with you that if default shall be made by M/s. _____ in performing any of the terms and conditions of the Contract or in payment of any money payable to Brahmaputra Cracker and Polymer Ltd, GUWAHATI, ASSAM, we shall on first demand without demur, reservation, contest, recourse or protest and/or without reference to the CONTRACTOR pay to OWNER in such manner as OWNER may direct the said amount of Rupees _____ only or such portion thereof not exceeding the said sum as OWNER may from time to time require.

2. OWNER will have the full liberty without reference to us and without affecting this guarantee to postpone for any time or from time to time the exercise of any of the powers and rights conferred on OWNER under the contract with the said CONTRACTOR and to enforce or to forbear from enforcing any powers or rights or by reason of time being given to the said CONTRACTOR and such postponement or forbearance would not have the effect of releasing the BANK from its obligation under this DEBT.

3. Your right to recover the said sum of Rs._____(Rupees _____ only) from BANK in manner aforesaid will not be ~~affected or suspended by reason of the fact that any dispute or disputes have~~ been

raised by the said M/s_____ and/or that any dispute or disputes are pending before any officer, tribunal or court and any demand made by OWNER in the BANK shall be conclusive and binding. The BANK shall not be released of its obligations under these presents by any exercise by OWNER of its liberty with reference to matters aforesaid or any of their or by reason or any other acts of omission or commission on the part of OWNER or any other indulgence shown by OWNER or by any other matter or thing whatsoever which under law would, but for this provision, have the effect of releasing the BANK.

4. The guarantee herein contained shall not be determined or affected by the liquidation or winding up, dissolution or change of constitution or insolvency of the CONTRACTOR but shall in all respects and for all purposes be binding and operative until payment of all money due to OWNER in respect of such liabilities is paid.

5. This guarantee shall be irrevocable and shall remain valid upto _____ (This date should be 90 (Ninety) days after the expiry of defect liability period) in accordance with the terms of contract which period is deemed to complete on _____. The BANK undertakes not to revoke this guarantee during its currency without previous consent of OWNER and further agrees that the Guarantee contained shall continue to be enforceable till the OWNER discharges this guarantee. However, if for any reason, the CONTRACTOR is unable to complete the work within the period stipulated in the contract and in case of extension of the date of completion resulting in extension of defect liability period or the CONTRACTOR fails to perform the work fully, the BANK hereby agrees to further extend this guarantee at the instance of the CONTRACTOR till such time as may be determined by the OWNER.

   If any further extension of this guarantee is required, the same shall be extended to such required period on receiving instructions from M/s _____ on whose behalf this guarantee is issued.

6. The BANK also agrees that OWNER at its option shall be entitled to enforce this guarantee against the surety, as a principal debtor in the first instance without proceeding against CONTRACTOR and not withstanding any security or other guarantee that OWNER may have in relation to the CONTRACTOR's liabilities.

7. The Bank Guarantee's payment of an amount is payable on demand and in any case within 24 hours of the presentation of the letter of invocation of Bank Guarantee. Should the banker fail to release payment on demand, a penal interest of 24% per annum shall become payable immediately and any dispute arising out of or in relation to the said Bank Guarantees shall be subject to the jurisdiction of Delhi Courts.

8. Therefore, we hereby affirm that we are guarantors and responsible to you on behalf of the Contractor up to a total amount of (amount of guarantees in words and figures) and we undertake to pay you, upon your first written demand declaring the Contractor to be in default under the contract and without caveat or argument, any sum or sums within the limits of (amount of guarantee) as aforesaid, without your needing to prove or show grounds or reasons for your demand or the sum specified therein.

   This guarantee is valid until the _____day of_____20_____.

9. We have power to issue this guarantee in your favour under memorandum and Article of Association and the undersigned has full powers to do so under the Power of Attorney / Resolution of the Board of Directors dated_____ accorded to him by the bank.

Yours faithfully,

(Signature of a person duly authorised to sign on behalf of the Bank)

Place:

WITNESS:

1..... (Signature)
..... (Printed Name)

2. ..... (Designation)
..... (Common Seal)

ANNEXURE-II

PROFORMA OF BANK GUARANTEE FOR MOBILISATION ADVANCE

(ON NON-JUDICIAL PAPER OF APPROPRIATE VALUE)

Ref.....
Bank Guarantee No…….

Date.....

M/s. Brahmaputra Cracker and Polymer Ltd.,
(Address as applicable)

In consideration of the M/s. Brahmaputra Cracker and Polymer Ltd., Guwahati, Assam, hereinafter called the "Owner" which expression shall unless repugnant to the context or meaning thereof include its successors, executors, administrators and assignees, having awarded to M/s..... having its registered office at ..... hereinafter referred as the 'CONTRACTOR', which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assignees, a contract hereinafter referred to as the 'Contract' for related works..... referred to as the 'WORK' on terms and conditions set out, inter-alia in the Owner's Contract No.....dated..... valued at..... (in words & figures) and as the Owner having agreed to make an advance payment for the performance of the above contract to the CONTRACTOR amounting to.....(in words & figures) as an advance against Bank Guarantee to be furnished by the CONTRACTOR.

We..... hereinafter referred to as the BANK which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assignees having our office at..... do hereby undertake to give the irrevocable and unconditional guarantee and do hereby undertake to pay the OWNER on first demand without any demur, reservation, contest, recourse, protest and without reference to the CONTRACTOR any and all monies payable by the CONTRACTOR by reason of any breach by the said CONTRACTOR of any of the terms and conditions of the said Contract to the extent of..... till the said advance is adjusted as aforesaid at any time upto..... We agree that the guarantee herein contained shall continue to be enforceable till the sum due to the Owner on account of the said advance is adjusted/recovered in full as aforesaid or till the Owner discharges this guarantee.

The OWNER shall have the fullest liberty without affecting in any way the liability of the BANK under this guarantee, from time to time to vary the advance or to extend the time for performance of the works by the CONTRACTOR. The BANK shall not be released from its liability under these presents by any exercise of the Owner of the liberty with reference to the matter aforesaid.

The Owner shall have the fullest liberty, without reference to CONTRACTOR and without affecting this guarantee to postpone for any time or from time to time the exercise of any powers vested in them or of any right which they might have against the CONTRACTOR, and to exercise the same at any time in any manner, and either to enforce or to forebear to enforce any power, covenants contained or implied in the Contract between the OWNER and the CONTRACTOR or any other course or remedy or security available to the OWNER and the BANK shall not be released of its obligations under these presents by any exercise by the OWNER of its liberty with reference to matters aforesaid or other acts of omission or commission on the part of the OWNER or any other law would, but for this provision, have the effect of releasing the BANK.

The right of the OWNER to recover the outstanding sum of advance upto Rs..... from the BANK in the manner aforesaid will not be affected or suspended by reason of the fact that any dispute or disputes has or have been raised by the CONTRACTOR and/or that any dispute or disputes is or are pending before any officer, tribunal or court and any demand made by OWNER on the BANK shall be conclusive and binding.

The BANK further undertakes not to revoke this guarantee during its currency without previous consent of the OWNER and further agrees that the guarantee contained shall continue to be enforceable till the OWNER discharges this guarantee.

The BANK also agrees that the OWNER shall at its option be entitled to enforce this guarantee against the BANK as a principal debtor, in the first instance, notwithstanding any other security or guarantee that OWNER may have in relation to the CONTRACTOR's liabilities towards the said advance.

The Bank Guarantee's payment of an amount is payable on demand and in any case within 24 hours of the presentation of the letter of invocation of Bank Guarantee. Should the banker fail to release payment on demand, a penal interest of 24% per annum shall become payable immediately and any dispute arising out of or in relation to the said Bank Guarantee's shall be subject to the jurisdiction of Delhi Courts.

Therefore, we hereby affirm that we are guarantors and responsible to you on behalf of the Contractor up to a total amount of (amount of guarantees in words and figures) and we undertake to pay you, upon your first written demand declaring the Contractor to be in default under the contract and without caveat or argument, any sum or sums within the limits of (amount of guarantee) as aforesaid, without your needing to prove or show grounds or reasons for your demand or the sum specified therein.

Notwithstanding anything contained hereinabove, our liability under this guarantee is restricted to _____ and it will remain in force upto and including _____ and shall be extended from time to time for such periods as may be advised by M/s on whose behalf this guarantee has been given.

We have power to issue this guarantee in your favour under Memorandum and Articles of Association and the undersigned has full power to do so under the Power of Attorney/ resolution of the Board of Directors dated..... accord to him by the BANK.

Dated.....this.....day of.....20.....

Signed by
(Person duly authorised by Bank)

Place:

WITNESS:
1..... (Signature)
..... (Printed Name)

2..... (Designation)
..... (Common Seal)

Annexure-III

PROFORMA FOR BANK GUARANTEE FOR EARNEST MONEY DEPOSIT/ BID SECURITY

(To be stamped in accordance with the Stamp Act)

Ref..... Bank Guarantee No.....
Date.....

To
Brahmaputra Cracker and Polymer Limited
Pushkara Nutan Gaon
NH-37, P.O. Mohan Ghat
Dibrugarh – 786 008
Assam, India

Dear Sir(s),

In accordance with Invitation for Bid under your reference No_____ M/s._____ having their Registered / Head Office at _____(hereinafter called the Tenderer) wish to participate in the said tender for _____
As an irrevocable Bank Guarantee against Earnest Money for the amount of _____ is required to be submitted by the Bidder as a condition precedent for participation in the said tender which amount is liable to be forfeited on the happening of any contingencies mentioned in the Bidding Document.

We, the _____ Bank at_____ having our Head Office _____ (Local Address) guarantee and undertake to pay immediately on demand without any recourse to the bidder by Brahmaputra Cracker and Polymer Limited (BCPL), the amount_____ _____ without any reservation, protest, demur and recourse. Any such demand made by BCPL, shall be conclusive and binding on us irrespective of any dispute or difference raised by the Bidder.

This guarantee shall be irrevocable and shall remain valid upto _____ [this date should be 5 months after the date finally set out for closing of bid]. If any further extension of this guarantee is required, the same shall be extended to such required period on receiving instructions from M/s._____ whose behalf this guarantee is issued.

In witness whereof the Bank, through its authorised officer, has set its hand and stamp on this _____day of _____200 __at_____.

WITNESS:

(SIGNATURE)
(NAME)

(SIGNATURE)
(NAME)
Designation with Bank Stamp

(OFFICIAL ADDRESS)

Attorney as per
Power of Attorney No._____
Date: _____

INSTRUCTIONS FOR FURNISHING BANK GUARANTEE

1. The Bank Guarantee by bidders will be given on non-judicial stamp paper as per stamp duty applicable. The non-judicial stamp paper should be in the name of the issuing bank. In case of foreign bank, the said banks guarantee to be issued by its correspondent bank in India on requisite non-judicial stamp paper.

2. The expiry date as mentioned in bid document should be arrived at by adding 2 months to the date of expiry of the bid validity unless otherwise specified in the Bidding Documents.

3. The bank guarantee by bidders will be given from bank as specified in ITB

4. A letter from the issuing bank of the requisite Bank Guarantee confirming that said bank guarantee /all future communication relating to the Bank Guarantee shall be forwarded to the Employer at its address as mentioned at ITB under intimation to Consultant.

5. Bidders must indicate the full postal address of the bank along with the bank's e-mail/ Fax no. from where the earnest money bond has been issued.

6. If a bank guarantee is issued by a commercial bank, then a letter to Employer confirming its net worth is more than Rs. 1,000,000,000/- (Rupees one hundred crore) or equivalent along with a documentary evidence under intimation to Consultant.

ANNEXURE-IV

INDEMNITY BOND

(TO BE NOTORISED AND ON STAMP PAPER OF APPROPRIATE VALUE)

To

Brahmaputra Cracker and Polymer Ltd.
(Address as applicable)

Dear Sirs,

WHEREAS Brahmaputra Cracker and Polymer Ltd., a Government of India Company, registered under the Companies Act, 1956, having its Registered Office at Hotel Brahmaputra Ashok, M G Road, Guwahati-781001 (Assam), (hereinafter called "the Indemnified" which expression shall include its successors and assigns) has awarded to M/s…… a Partnership Firm/ Sole Proprietor Business/ a company having its Registered Office at ……. (hereinafter called "the Indemnifier", which expression shall include its successors and assigns) a contract for conditions set out, inter-alia, in "the Indemnified" Purchase Order No. …… dated…….. (hereinafter referred to as "the said Contract") to "the Indemnifier".

AND WHEREAS "the Indemnified" has agreed to supply to "the Indemnifier" raw material/ components to the value of Rs……... (Rupees…… …… only) for incorporation in fabrication by "the Indemnifier" in terms of "the said contract", the components/ raw material to be supplied by "the Indemnified" to "the Indemnifier" for the said fabrication, (hereinafter, or the sake of brevity, referred to as "the said material") and pending fabrication and delivery at job-site of the completed fabricated work(s) incorporating "the said material" and accounting for "the said material" shall be under the sole custody and charge of "the Indemnifier" and shall be kept, stored, altered, worked upon and/ or fabricated at the sole risk and expenses of "the Indemnifier".

As a Pre-condition to the supply of "the said material" by "the Indemnified" to "the Indemnifier", the Indemnified" has required "the Indemnifier" to furnish to "the Indemnified" security in the manner and upon terms and conditions hereinafter indicated:

NOW THEREFORE, in consideration of the premises aforesaid "the Indemnifier" Shri……, Shri……. all Directors/ Partners/ Sole proprietor of "the Indemnifier" in consideration of aforesaid "contract" hereby irrevocably and unconditionally and jointly and severally undertake to indemnify and always keep "the Indemnified" from and against all loss, damage and destruction (inclusive but not limited to any or all loss or damage or destruction to or of "the said material" or any item or part thereof) by theft, fire, flood, storm, tempest, lightning, explosion, storage, chemical or physical action or reaction, bending, wrapping, exposure, rusting, faulty workmanship, faulty fabrication or faulty method of technique of fabrication, riot, civil commotion or other act of omission or commission whatsoever within or beyond the control of "the Indemnifier", misuse and misappropriation by "the Indemnifier's" servants and/or agents whatsoever to, of or in "the said material" or any part or item thereof between the date that the same or relative part or item thereof was supplied to "the Indemnifier" up to and until the return to "the Indemnified" on due dates of "the said material" or relative part or item thereof or completed fabricated work(s) incorporating the said material AND jointly and severally

undertake to pay to “the indemnified” forthwith on first demand in writing without protest or demur the value of “the said material” or item part thereof lost, damaged, destroyed, misused and/or misappropriated, as the case may be, inclusive of “the Indemnified” ’s cost and expenses (inclusive but not limited to handling, transportation, cartage, insurance, freight, packing and inspection costs and/ or expenses) as specified in the said demand.

AND “the Indemnifier” hereby agree with “the Indemnified” that :

1. This Indemnity shall remain valid and irrevocable until the settlement of all claims of “the Indemnified” arising hereunder.

2. This Indemnity shall be in addition to any other Indemnity, Guarantee or Security whatsoever that “the Indemnified” may now or any time anywise have in relation to “the Indemnifier” ‘s obligations/ liabilities under and/ or in connection with the said contract inclusive of “the said material” and “the Indemnified” shall have full authority to take recourse to or enforce this security in preference to the other security (ies) at its sole discretion, and no failure on the part of “the Indemnified” in enforcing or requiring enforcement of any other security shall have the effect of releasing “the Indemnifier” from its full liability hereunder:

3. “The Indemnified” shall be at liberty without reference to “the Indemnifier” and without affecting the full liability of “the Indemnifier” hereunder to take any other such security in respect of “the Indemnifier” ‘s obligations and/or liabilities under or in connection with the “said contract” inclusive of “the said material” and to vary the terms vis-a-vis “the Indemnifier” of “the said contract” or to grant time and/or indulgence to “the Indemnifier” or to reduce or to increase or otherwise vary the prices or the total contract value or the quantity, quality, description or value of the said material or to release or to forbear from endorsement of all or any of the obligations of “the Indemnifier” under the said contract (inclusive of anything in respect of “the said material”) and/or to remedies of “the Indemnified” under any other security (ies) now or hereinafter held by “the Indemnified” and no such dealing(s), variations(s), reduction(s), increase (s) or other indulgence (s) or arrangement(s) with “the Indemnifier” or release “the Indemnifier” from their full liability to “the Indemnified” hereunder or of anywise prejudicing rights of “the Indemnified” against “the Indemnifier” and “the Indemnifier” hereby waive all rights, if any, at any time, inconsistent with the terms of this Indemnity.

4. This Indemnity shall not be determined or affected by the liquidation or winding up, dissolution, or change of constitution or insolvency of “the Indemnifier” and the obligations of “the Indemnifier” in terms hereof shall not be anywise affected or suspended by reason of any dispute or disputes having been raised by “the Indemnifier” (whether now pending before any Arbitrator, Officer, Tribunal or Court) or any denial of liability by “the Indemnifier” or any other order or communication whatsoever by “the Indemnifier” or any other order or communication whatsoever by “the Indemnifier” stopping or preventing or purporting to stop or prevent any payment by “the Indemnifier” to “the Indemnified” in terms hereof.

5. The mere statement made by or on behalf of “the Indemnified” in any notice or demand or other writing addressed to “the Indemnifier” as to any of “the said material” or item or part thereof supplied to “the Indemnifier” having been lost, damaged, destroyed, misused or misappropriated while in the custody of “the Indemnifier” before or after completion of the completed fabricated work(s) incorporating “the said material” and delivery at job site thereof shall as between “the Indemnifier” and “the Indemnified” be conclusive of the factum of “the said material” or item or part thereof having been supplied to “the Indemnifier” and/or the ~~loss, damage, destruction, misuse or misappropriation thereof, as the case m~~ay be,

while in the custody of “the Indemnifier” and/or prior to the completion of the completed fabricated work(s) and delivery to job site thereof without necessity on the part of “the Indemnified” to produce any documentary proof or other evidence whatsoever in support of this.

6. The amount stated in any notice of demand addressed by “the Indemnified” to “the Indemnifier” as the value of any of “the said material”, lost, damaged, destroyed or misused or misappropriated, inclusive relative to the cost and expenses incurred by “the Indemnified” in connection therewith shall as between “the Indemnifier” and “the Indemnified” be conclusive of the value of such “said material” and the said costs and expenses as also of the amount liable to be paid by “the Indemnifier” to “the Indemnified” in terms and for the purpose of, without necessity for “the Indemnified” to produce any voucher, bill or other documentation or evidence whatsoever in support thereof.

In witness whereof “the Indemnifier” have hereunto set and subscribed his hand this day and year first hereinabove written in the presence of witnesses.

Yours faithfully,

1.

2.

3.

WITNESSES:

1.

2.

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1.0 GENERAL

1.1 Special Conditions of Contract (SCC) shall be read in conjunction with the General Conditions of Contract (GCC), Schedule of Rates, specifications of work, drawings and any other document forming part of this Contract wherever the context so requires.

1.2 Notwithstanding the sub-division of the document into these separate sections and volumes, every part of each section shall be deemed to be supplementary of every other part and shall be read with and into the Contract so far as it may be practicable to do so.

1.3 Where any portion of the GCC is repugnant to or at variance with any provisions of the Special Conditions of Contract, then unless a different intention appears, **the provision (s) of the Special Conditions of Contract shall be deemed to override the provision(s) of GCC** only to the extent that such repugnancy's of variations in the Special Conditions of Contract are not possible of being reconciled with the provisions of GCC.

1.4 Wherever it is stated in this Bidding Document that such and such supply is to be effected or such and such a work is to be carried out, it shall be understood that the same shall be effected/carried out by the CONTRACTOR at his own cost, unless a different intention is specifically and expressly stated herein or otherwise explicit from the context. Contract value (also referred to as Contract Price) shall be deemed to have included such cost.

1.5 The materials, design and workmanship shall satisfy the applicable relevant Indian Standards, the job specifications contained herein & codes referred to. Where the job specifications stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied. In the absence of any Standard/ Specifications/ Codes of practice for detailed specifications covering any part of the work covered in this Bidding Document, the instructions/directions of Engineer-in-Charge will be binding on the CONTRACTOR.

1.6 In the absence of any Specifications covering any material, design or work(s) the same shall be performed/ supplied/ executed in accordance with standard Engineering practice as per the instructions/directions of the Engineer-in-Charge, which will be binding on the CONTRACTOR.

2.0 WATER AND POWER

2.1 Construction water shall not be provided by OWNER and the CONTRACTOR, shall make all the arrangement for Construction Water at their sole cost and expense.

2.2 Construction power shall not be provided by the OWNER and the CONTRACTOR, shall make all the arrangements for Construction Power required for this work at their sole cost and expenses.

3.0 SCOPE OF WORK

3.1 The scope of work covered in this contract will be as described in **Annexure-I to SCC.**

4.0 SCOPE OF SUPPLY

4.1 The scope of supply covered in this contract will be as described in **Annexure-II to SCC**.

5.0 TIME SCHEDULE

5.1 The Work shall be executed strictly as per time schedule given in **Annexure-III to SCC.** The period of completion given includes the time required for mobilisation, demobilisation and completion of work in all respects to the satisfaction of the Engineer-in-Charge.

5.2 A joint programme of execution of work will be prepared by the Engineer-in-Charge and CONTRACTOR. This programme will take into account the time of completion mentioned in clause 5.1 above.

5.3 Weekly execution programme will be drawn up by the Engineer-in-Charge jointly with the CONTRACTOR based on priorities and the joint programme of execution as referred to above. The CONTRACTOR shall scrupulously adhere to the Targets/Programmes by deploying adequate personnel, Construction Equipment, Tools and Tackles and also by timely supply of required materials coming within his scope of supply as per Contract. In all matters concerning the extent of target set out in the weekly/monthly programme and the degree of achievement, the decision of the Engineer-in-Charge will be final and binding on the CONTRACTOR.

5.4 CONTRACTOR shall give every day category-wise labour and equipment deployment report along with the progress of work done on previous day in the format prescribed by the Engineer-in-Charge.

6.0 LABOUR LICENCE

Before starting of work, Contractor shall obtain a license from concerned authorities under the Contract Labour (Abolition and Regulation) Act 1970, and furnish copy of the same to Owner.

7.0 SITE CLEANING

7.1 The CONTRACTOR shall clean and keep clean the work site from time to time to the satisfaction of the Engineer-in-Charge for easy access to work site and to ensure safe passage, movement and working.

7.2 If the work involves dismantling of any existing structure in whole or part, care shall be taken to limit the dismantling upto the exact point and/ or lines as directed by the Engineer-in-Charge and any damage caused to the existing structure beyond the said line or point shall be repaired and restored to the original condition at the cost and risk of CONTRACTOR to the satisfaction of the Engineer-in-Charge, whose decision shall be final and binding upon the CONTRACTOR.

7.3 The CONTRACTOR shall be the custodian of the dismantled materials till the Engineer-in-Charge takes charge thereof.

7.4 The CONTRACTOR shall dispose off the unserviceable materials, debris etc. to any area within premises/ other area as directed by the Engineer-in-Charge.

7.5 The CONTRACTOR shall sort out, clear and stack the serviceable materials obtained from the dismantling/ renewal at places as directed by the Engineer-in-Charge.

7.6 No extra payment shall be paid on this account. The rates quoted in SOR are deemed to be inclusive of all the costs towards all the above activities as well.

8.0 MEASUREMENT OF WORKS

Measurement of work will be as described in **Annexure-IV to SCC** shall apply.

9.0 ON ACCOUNT PAYMENTS

Payment shall be made as described in **Annexure-V to SCC**.

10.0 ROUNDING OFF

All payments to and recoveries from the bill of CONTRACTOR shall be rounded off to the nearest Rupee. Wherever the amount to be paid/ recovered consists of a fraction of a Rupee (Paise), the amount shall be rounded off to the next higher rupee if the fraction consists of 50 (fifty) paise or more and if the fraction of a Rupee is less then 50 (fifty) paise, the same shall be ignored.

11.0 FIRM PRICE

The quoted prices shall remain firm and fixed and valid until completion of the contract and shall not be subject to escalation for any reason whatsoever except for variation in the price of **Structural Steel & Reinforcement Bar** as per clause 40.0 mentioned below.

12.0 TAXES AND DUTIES

12.1 The value of Free Issue materials is Rs. 720 Lakh. Pls refer Clause No. 23 of NIT

12.2 The Contracted rates/prices are inclusive of all Taxes, Duties, Levies, Octroi, Cess etc. but excluding Entry Tax on Capital Goods permanently incorporated in the works. Entry Tax shall be paid by the Contractor for all other Goods.For tools & tackles brought in by contractor (which will not get transferred during execution of work contract) contractor has to bear the liability of entry tax. Further Contracted rates/prices are exclusive of Cenvatable service tax which shall be reimbursed by Owner at actual against submission of Cenvatable invoices. No price variation on account of any change in other Taxes, Duties, Levies, Octroi, Cess etc. including imposition of new taxes shall be allowed.

12.3 Entry Tax:

Entry Tax is exempted for Capital Goods permanently incorporated in the works during execution of work contract and for all other Goods, Entry Tax shall be paid by the Contractor. For tools & tackles brought in by contractor (which will not get transferred during execution of work contract) contractor has to bear the liability of entry tax.

12.4 Works Contract Tax:

The Contracted rates/prices shall be inclusive of Assam VAT component on Works Contract. Contractor may opt to the scheme of Works contract taxation as per their choice. Works Contract Tax as applicable will be deducted at source and TDS certificate shall be issued to the contractor.

12.5 Service tax:

a) Unit rates / Lumpsum prices in the Schedule of Rates shall be exclusive of Cenvatable Service Tax. Bidders shall quote Service Tax in FORM SP-3 attached with this Amendment

b) Service tax shall be reimbursed to the CONTRACTOR at actual, against submission of Cenvatable invoice issued in accordance with Service Tax Rules.

c) It is the responsibility of the CONTRACTOR to ascertain the applicable rules and follow the provisions of the Service tax including Government of India latest Notifications and its amendments, if any."

d) Contractor shall indicate total Cenvatable service tax amount payable under the contract in the Form SP-3. However, if the services fall under the list of services defined in reverse charge mechanism, then the liability of deposition of service tax to the tax authority by the Contractor and the Owner shall be dealt in accordance with Notifications issued by Government of India from time to time

e) While quoting against the tender, bidder shall have the option to decide on the method of valuation prescribed under the service tax rules, i.e. either on actual service portion or deemed service portion

f) Wherever Service Tax is to be paid on actual service portion, the bidder(s) shall indicate the value for service portion on which Service Tax is applicable.

g) Wherever Service Tax is to be paid on deemed service portion as per percentage prescribed, the bidder(s) shall indicate the percentage (presently 40%, 60% or 70%) of the gross works contract value on which Service Tax is applicable.

h) Wherever the bidder opts for paying Service Tax on deemed service portion, the gross works contract value for the purpose of payment of service tax shall mean the sum total of the gross amount charged for supplied in or in relation to the execution of the works contract, whether or not supplied under the same contract or any other contract.

i) in case a bidder does not provide any of the above requisite information, his bid will be evaluated with highest applicable rate of service tax (Presently 12.36%) on total value of works contract.

12.6 Central Sales Tax (CST):

The Contracted rates/prices shall be inclusive of CST, wherever applicable, at applicable rate. BCPL will not issue 'C- Form' to the contractor.

12.7 Custom Duty:

The Contracted rates/prices shall be inclusive of Import Duties (CD+CVD+SAD) at the applicable Merit Rate of Duty. Owner shall not issue Project Authority Certificate (PAC)/ Import License.

The contractor shall arrange import of all materials required for permanent incorporation in the works as well as construction equipment as per the guidelines laid down by government of India.

12.8 Excise Duty

a) Bidder shall also be required to quote the amount of Cenvatable Excise Duty and Cenvatable CVD/SAD included in the quoted rates in respect of eligible items that would be passed on to Owner, for the purpose of evaluation. Adequate and relevant documents for availing Cenvat benefit by Owner shall be provided by the bidder.

b) The Contractor shall be required to submit Original Cenvatable documents as required for Cenvatable CVD and SAD/Excise duty paid to the concerned

authorities on materials supplied to the Owner to claim CENVAT benefit in respect thereof by the Owner .

c) The classification of goods as per Central Excise Tariff should be correctly done to ensure that CENVAT benefit is not lost to OWNER on account of any error on the part of the CONTRACTOR.

d) OWNER shall not reimburse CENVATABLE duties on Central Excise Duty, CVD and SAD if the requirements as specified above are not fulfilled by the CONTRACTOR or Supplier concerned."

12.9 Income Tax & Corporate Tax:

Income Tax deductions shall be made from all payments made to the Contractor as per the rules and regulations in force in accordance with the Income Tax Act prevailing from time to time & TDS Certificate shall be provided.

Corporate Tax Liability if any shall be to Contractor's account.

12.10 Construction Workers Welfare Cess:

The contractor must be registered with the concerned authorities under the Building and other Construction Workers' (RE&CS) Act, 1996 or in case of non-registration; the contractor should obtain registration within one month of the award of contract.

The contractor shall be responsible to comply with all provisions of the Building and Other Construction Workers' (RE&CS) Act, 1996, the Building and other Construction Workers' Welfare Cess Act, 1996, the Building and other Construction Workers' (RE&CS) Rules, 1998 and the Building and other Construction Workers Welfare Cess Rules, 1998.

Cess, as per the prevailing rate, shall be deducted at source from bills of the contactors by the Engineer-in-Charge and remitted to the "Secretary, Building and other Construction Workers Welfare Board" of the concerned State. The contactor shall be responsible to submit final assessment return of the Cess amount to the assessing officer after adjusting the Cess deducted at source.

12.11 Contractor shall provide CENVATable Documents, wherever applicable.

12.12 Notwithstanding the foregoing, Owner shall not bear any liability in respect of:

a) Personal taxes on the personnel deployed by the Contractors, his sub-contractors and Agents, etc.

b) The Corporate Taxes in respect of Contractor and his Sub-contractors and other Agents, Indian or foreign based.

12.13 Taxes, Duties And Levies In Foreign Countries

The Contractor shall accept full and exclusive liability at his own cost for the payment of any and all taxes, duties, cesses and levies howsoever designated, as are payable to any government, local or statutory authority in any country other than India as are now in force or as are hereafter imposed, increased or modified and as are payable by Contractor, his agents, Sub-Contractors and its/their respective employees for or in relation to this performance of this contract. The Contractor shall be deemed to have been fully informed with respect to all such liabilities and considered and included the same in its bid and the quoted price shall not be varied in any way on this account.

12.14 Withholding, Accounting And Tax Requirements, if applicble

The CONTRACTOR shall withhold from wages and salaries of its agents, servants or employees all sums required to be withheld by the laws of India, and to pay the same promptly and directly when due to the proper authority (ies). The CONTRACTOR further agrees to comply with all accounting and reporting requirements under the laws of India, and to pay and bear the cost of such compliance. Upon request by the OWNER, the CONTRACTOR will furnish OWNER evidence of payment of applicable withholding taxes in India.

12.15 Registration of Contractor under AVAT

As per Provision of section 47(4) of Assam VAT Act 2003, the contractor has to be a registered dealer under the Act. The contractor has to produce an authenticated copy of the certificate of registration under AVAT Act 2003 or furnish an undertaking for getting so registered.

12.16 CENVAT BENEFITS

a. The CONTRACTOR shall be required to submit Original cenvatable documents as required for Service Tax, Excise duty,countervailing duty (CVD) and Special Additional Duty(SAD) paid to the concerned authorities on materials supplied to the OWNER for the OWNER to claim CENVAT benefit in respect thereof.

b. Cenvat Benefits is being availed by BCPL .All documents of material brought to the site of work by Contractor shall be prepared with notation “Consignee-BCPL, A/c Contractor” to enable BCPL to claim Cenvat Benefit .The classification of goods as per Central Excise/Customs Tariff should be correctly done to ensure that CENVAT benefit is not lost by the OWNER on account of any error on the part of the CONTRACTOR.

c. It is the responsibility of the CONTRACTOR to ascertain the applicable rules and follow the provisions of the Excise Act/ Service tax ,Excise & Service Tax,CVD/SAD Rules as applicable from time to time and in case of lapse in following the appropriate procedure/submission of appropriate documents, which may result in disallowance of OWNER’S Cenvat claim, the OWNER reserves the right to withhold the payment of Cenvatable duties.

d. The OWNER shall withhold payment of Cenvatable Duties (currently Central Excise, CVD/SAD) and Cenvatable Service Tax if the relevant documentation is not made available to OWNER to enable OWNER to claim CENVAT benefit for the amount indicated in Price Bid, either due to the fact that the item is not cenvatable, wrong classification or wrong documentation.

e. Consequently the price of supplies & services shall stand reduced to the extent to which CENVAT benefit, which would otherwise have been available to the OWNER, could not be availed of by the OWNER.

f. Contractor shall confirm that Cenvat benefit for supply of the specified goods can be passed on to BCPL.

g. Payments to be released by BCPL against submission of relevant cenvatable documents as per Govt. of India Rules to BCPL. The total payment payable against Cenvatable documents would not exceed the amount of Cenvatable Excise Duties/CVD/SAD, as applicable indicated by the Contractor. In case the Cenvatable documents submitted by Contractor are for a value less than the indicated amount of Cenvatable Excise Duties/CVD/SAD, as applicable , the difference shall be deducted from the payments due to the Contractor. Transporter's copy of Excise Invoice etc as per Excise Rules to enable BCPL

to claim benefit.

OWNER shall avail benefit of Cenvat Credit for the amount of service tax paid for various input services provided by the contractor".

h. Excise Duty on the bought out raw materials and consumables, e.g. cement, reinforcement steel, structural steel, sand, bricks, stone, tiles etc. (Other than finished goods) for which cenvat credit is not available to Owner as per Excise Rules in India, shall not considered by the Bidder under Cenvatable Excise Duty and must be included in the Bidder's quoted prices and owner will not pay extra to the contractor for such items

Title of materials other than finished goods shall not be transferred by the Contractor to BCPL at the time of supply and brought to site and shall only be deemed to be transferred by the Contractor to BCPL, upon Final Completion. Only the capital goods/ finished goods which are sold & supplied to BCPL and for which Cenvatable benefit is available as per Excise Rules, Contractor shall transfer the title to BCPL, at the stage of ex-works.

13.0 PROVIDENT FUND

13.1 The CONTRACTOR shall strictly comply with the provisions of Employees Provident Fund Act and register the establishment with the concerned Regional Provident Fund Commissioner before commencing the work. The CONTRACTOR shall deposit "Employees" and "Employers" contributions in the designated account with the designated Authority every month. The CONTRACTOR shall furnish along with each running bill, the challan / receipt for the payment of provident fund made to the RPFC for the preceding month(s).

13.2 In case the Provident Fund Authority's receipted challan referred to above is not furnished, the OWNER shall deduct 5% (five percent) of the payable amount from the CONTRACTOR'S running bill and retain the same as a security for the payment of the Provident Fund. Such retained amounts shall be refunded to the CONTRACTOR only on production of challan / receipt of the Provident Fund Authority for the period covered by the related deduction.

14.0 SURVEY AND LEVEL/ SETTING OUT WORK

14.1 It shall be Contractor's responsibility to locate existing Survey of India bench mark and to shift the existing benchmark to his work site to set out the necessary control points and alignment of the various works. The Contractor shall have to employ efficient survey team for this purpose and the accuracy of such setting outworks shall be the Contractor's sole responsibility.

14.2 The Contractor shall give the Engineer-in-Charge not less than 24 (twenty four) hours notice in writing of his intention to set out or give levels for any part of the work so that arrangement may be made for checking the same.

14.3 The Contractor shall at his own expense provide all assistance, which the Engineer-in-Charge may require for checking the setting out of works.

14.4 The Contractor shall be entirely responsible for the horizontal and vertical alignment, the level and correctness of every part of the work and shall rectify any errors or imperfections therein. The Contractor at his own cost shall carry out such rectifications, when instructions are issued to this effect by the Engineer-in-Charge or his representative.

15.0 STATUTORY APPROVALS

The approval from any authority required as per statutory rules and regulations of Central / State Govt. shall be the Contractor's responsibility unless otherwise specified in the Bidding Document. The application on behalf of the Owner for submission to relevant authorities along with copies of required certificates complete in all respects shall be prepared and submitted by the Contractor well ahead of time so that the actual construction/commissioning of the work is not delayed for want of the approval/inspection by concerned authorities. The Contractor shall arrange the inspection of the works by the authorities and necessary coordination and liaison work in this respect shall be the responsibility of the Contractor. However, statutory fees paid for all inspections and approvals by such authorities, if any, should be included in the quoted price.

The inspection and acceptance of the work by statutory authorities shall, however, not absolve the Contractor from any of his responsibilities under this Contract.

16.0 EMPLOYMENT OF LOCAL LABOUR

16.1 The CONTRACTOR shall ensure that local labour, skilled and/or unskilled, to the extent available shall be employed in this work. In case of non - availability of suitable labour in any category out of the above persons, labour from outside may be employed.

16.2 The CONTRACTOR shall not recruit personnel of any category from among those who are already employed by the other agencies working at site but shall make maximum use of local labour available.

17.0 LABOUR

17.1 The Contractor shall make his own arrangements for the engagement of all labour for doing the work at site or in respect of or in connection with the execution of work as also for the transport, housing, feeding and payment thereof.

17.2 The Contractor shall provide on the site, an adequate supply of drinking and other water for the use of the Contractor's staff and labours. The construction area shall be properly illuminated so that work is performed safely and to achieve the required progress at construction site.

17.3 The Contractor shall not import, sell, give, barter or otherwise dispose of any alcoholic liquor, or drugs, or permit or suffer any such importation, sale, gift, barter or disposal by his sub-Contractor/s, his/ their servants, agents or employees.

17.4 The Contractor shall not give, barter or otherwise dispose of to any person or persons, any arms or ammunition of any kind or permit or suffer the same as aforesaid by his sub-Contractor/s, his/their servants, agents or employees.

17.5 The Contractor shall in all dealings with labour in his employment have due regard to all recognised festivals, days of rest and religious or other customs.

17.6 In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government, or the local medical or sanitary authorities for the purpose of dealing with and overcoming the same.

17.7 The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riots or disorderly conduct by or amongst his employees/labour and

for the preservation of peace and protection of persons and property in the neighbourhood of the works against the same.

17.8 The Contractor shall at all times during the continuance of the contract comply fully with all existing Acts, Regulations and bye laws including all statutory amendments and re-enactment of State or Central Government and other local authorities and any other enactments and acts that may be passed in future either by the State or the Central Government or local authority, including Indian Workmen's Compensation Act., Contract Labour (Regulation and Abolition) Act, 1970 and Equal Remuneration Act, 1976, Factories Act, Minimum Wages Act, Provident Fund Act, etc., and sanitary arrangement for the said Act. Health and Sanitary Arrangements for workmen, Insurance and other benefits etc., and shall indemnify and keep the Owner/Engineer-in-Charge indemnified in case any proceedings are taken or commenced by any authority against the Owner/Engineer-in-Charge for any contravention of any of the laws, bye laws or scheme by the Contractor. If as a result of Contractor's failure, negligence, omission, default or non-observance of any provisions of any laws, the Owner/Engineer-in-Charge is called upon by any authority to pay or reimburse or required to pay or reimburse any amount, the Owner/Engineer-in-Charge shall be entitled to deduct the same from any money due or that may become due to the Contractor under this contract or any other contract or otherwise recover from the Contractor any sums which the Owner/Engineer-in-Charge is required or called upon to pay or reimburse on behalf of the Contractor. All registration and statutory inspection fees in respect of his work pursuant to the contract shall be paid by the Contractor.

17.9 The Contractor shall pay the labourers engaged by him on the work not less than a fair wage, which expression shall mean, whether for time or piece work, rates of wages as may be fixed by the Public Works Department as fair wages for **ASSAM Region** payable to the different categories of labourers or those notified under the Minimum Wages Act for corresponding employees of the Owner/Engineer-in-Charge whichever may be higher.

17.10 The Contractor shall notwithstanding the provisions of any contract to the contrary, cause to be paid a fair wage to the labourers indirectly engaged by sub-Contractors in connection with the said works as if the labourer had been directly employed by him.

17.11 The Contractor shall maintain records of wages and other remuneration paid to his employees in such form as may be convenient and to the satisfaction of the Owner/Engineer-in-Charge and the Conciliation Officer (Central), Ministry of Labour, Government of India, or such other authorised person appointed by Central or State Government and the same shall interalia include the following particulars of each worker:

i) Name, works number and grade.
ii) Rate of daily or monthly wage.
iii) Nature of work on which employed.
iv) Total number of days worked during each wage period.
v) Total amount payable for the work during each wage period.
vi) All deductions made from the wage with details in each case of the ground for which the deduction is made.
vii) Wage actually paid for each wage period.

17.12 The Contractor shall comply with all the precautions as required for the safety of the workmen by I.L.O. convention (No. 62) as far as they are applicable to the contract. The Contractor shall provide all necessary safety appliances e.g., goggles, helmets, masks, etc. to the workmen and the staff.

18.0 CONTRACTOR'S LABOURERS TO LEAVE SITE ON COMPLETION OF THE WORK

18.1 The labourers of CONTRACTOR must leave the location of the project site after the work is tapered off/ completed.

19.0 SETTLEMENT OF DISPUTE BETWEEN GOVT. DEPT./ PUBLIC SECTOR UNDERTAKINGS

19.1 If the CONTRACTOR is a PSU or Enterprise or is a Govt. Deptt., any disputes or differences between the CONTRACTOR and the OWNER hereto arising out of any notified claim of the CONTRACTOR in terms hereof and/or arising out of any amount claimed by the OWNER (whether or not the amount claimed by the OWNER or any part thereof shall have been deducted from the final bill of the CONTRACTOR or any amount paid by the OWNER to the CONTRACTOR in respect of the work), then in suppression of the provisions of Section 9 of the General Conditions of Contract, the following provisions shall apply, namely; such disputes or differences shall be resolved amicably by mutual consultation or through the good offices or empowered agencies of the Government. If such resolution is not possible, then the unresolved disputes or differences shall be referred to arbitration of an arbitrator to be nominated by the Secretary, Department of legal affairs (Law Secretary) in terms of the Office Memorandum No. 55/3/1/75-CF dated 19th December, 1975 issued by the Cabinet Secretariat (Department of Cabinet Affairs) as modified from time to time. The Arbitration Act shall not be applicable to the arbitrator under this clause. The award of the arbitrator shall be binding upon parties to the dispute, provided, however any party aggrieved by such award may make a further reference for setting aside or revision of the award to Law Secretary whose decision shall bind the parties finally and conclusively. The parties to the dispute will share equally the cost of Arbitration as intimated by the Arbitrator.

19.2 Notwithstanding the existence of any dispute or arbitration in terms hereof or otherwise, the CONTRACTOR shall continue and be bound to continue and perform the works to completion in all respects according to the Contract (unless the Contract or Works be determined by the OWNER) and the CONTRACTOR shall remain liable and bound in all respects under the Contract".

20.0 FUEL REQUIREMENT OF WORKERS

20.1 Contractor shall ensure that the fuel requirement of the workers is arranged, to avoid any cutting of trees etc., in the area. This is as per the requirement of Central Pollution Control Board. Therefore, no fire wood is to be used by CONTRACTOR or Contractor's LABOUR.

21.0 RESPONSIBILITY OF CONTRACTOR

21.1 It shall be the responsibility of the CONTRACTOR to obtain the approval for any revision and/or modifications decided by the CONTRACTOR from the OWNER/ Engineer-in-Charge before implementation. Also such revisions and/ or modifications if accepted/ approved by the OWNER / Engineer-in-Charge shall be carried out at no extra cost to the OWNER. All expenses towards mobilisation at site and demobilisation including bringing in equipment, work force, materials, dismantling the equipment, clearing the site etc. shall be deemed to be included in the prices quoted and no separate payments on account of such expenses shall be entertained.

21.2 It shall be responsibility of the CONTRACTOR to provide, operate and maintain all necessary construction equipment, steel scaffoldings and safety gadgets, cranes/ derrick and other lifting tackles, tools and appliances to perform the work in a workman like and efficient manner and complete all the jobs as per time schedules without any extra cost to the OWNER.

21.3 Preparing approaches and working area for the movement and operation of the cranes/ derrick, levelling the areas for assembly and erection shall also be responsibility of the CONTRACTOR. The CONTRACTOR shall acquaint himself with access availability facilities, such as railway siding, local labour etc., to provide suitable allowances in his quotation. The CONTRACTOR may have to build temporary access roads to aid his own work, which shall also be taken care of while quoting for the work.

21.4 The CONTRACTOR shall responsible for procurement and supply in sequence and at the appropriate time of all equipments/ materials and consumables and his rates for execution of work will include of supply of all these items.

21.5 The contractor shall make all provisions for monsoon protection cover to ensure that there shall not be any stoppage/ hindrance in working during monsoon season.

22.0 QUALITY ASSURANCE SYSTEM

22.1 The CONTRACTOR shall adhere to the quality assurance system as per EIL Specification No. 6-78-0001 Rev. 0 enclosed as per **Annexure-VI to SCC**. After the award of the contract, detailed quality assurance programme to be followed for the execution of contract shall be submitted by CONTRACTOR.

22.2 The CONTRACTOR shall establish document and maintain an effective quality assurance system as outlined in recognised codes.

22.3 Quality Assurance System plans/ procedures of the CONTRACTOR shall be furnished in the form of a QA manual. This document should cover details of the personnel responsible for the quality assurance, plans or procedures to be followed for quality control. The quality assurance system should indicate organisational approach for quality control and quality assurance of the construction activities, at all stages of work at site as well as at manufacturer's works and despatch of materials.

22.4 The Quality Assurance plan for various equipment and materials shall be furnished to the EIL/ OWNER prior to commencement of manufacturing. The EIL/ OWNER shall review the same within 3 (three) weeks of its submission.

22.5 The responsibility for inspection/ testing as per specification approved documents and agreed Quality Assurance procedure and plans shall be that of the CONTRACTOR. Inspection activities of the Third Party Inspection Agency shall be coordinated by the Inspection Coordinator of CONTRACTOR.

22.6 The OWNER/EIL or their representative shall reserve the right to inspect/ witness, review any or all stages of work at shop/site as deemed necessary for quality assurance.

22.7 The CONTRACTOR has to ensure the deployment of Quality Assurance and Quality Control Engineer(s) depending upon the quantum of work. This QA/QC group shall be fully responsible to carryout the work as per standards and all code requirements. In case Engineer-In-Charge feels that QA/QC Engineer(s) of CONTRACTOR are incompetent or insufficient, CONTRACTOR has to deploy other experienced Engineer(s) as per site requirement and to the full satisfaction of Engineer-In-Charge.

22.8 In case CONTRACTOR fails to follow the instructions of Engineer-In-Charge with respect to above clauses, next payment due to him shall not be released unless until he complies with the instructions to the full satisfaction of Engineer-In-Charge.

23.0 MINIMUM MANPOWER TO BE MOBILISED

23.1 The Contractor shall without prejudice to his overall responsibility to execute and complete the work as per specifications and time schedule, progressively deploy qualified skilled, semi skilled and unskilled personnel on the work and augment the same as decided by the Engineer-in-Charge depending upon the site requirement & the exigencies of work so as to complete all works within the construction schedule without any additional cost to OWNER. The Contractor shall also deploy Minimum Key Construction Manpower as per enclosed **Annexure-VII to SCC**.

23.2 Qualification and experience of Key Construction Personnel to be deployed at site shall be as per **Annexure-VIII** to SCC. Contractor shall submit bio-data of Key Construction Personnel meeting the requirement of this Annexure which will be reviewed and approved by Engineer-in-Charge.

24.0 MINIMUM EQUIPMENTS, TOOLS & TACKLES

24.1 The Contractor shall without prejudice to his overall responsibility to execute and complete the work as per specifications and time schedule, progressively deploy minimum equipments and tools & tackles as per **Annexure –IX to SCC** and augment the same as decided by the Engineer-in-Charge depending on the exigencies of the work so as to complete all works within the contracted time schedule and without any additional cost to Owner.

25.0 TESTS AND INSPECTION OF WORKS

25.1 The CONTRACTOR shall carry out the various tests as enumerated in the technical specifications in the bidding document and the technical documents that will be furnished to him during the performance of the work at no extra cost to the owner.

25.2 All the tests either on the field or at outside laboratory concerning the execution of the work and supply of materials by the CONTRACTOR shall be carried out by the CONTRACTOR at his own cost.

25.3 The work is subject to inspection at all times by the Engineer-in-charge. The CONTRACTOR shall carry out all instructions given during inspection and shall ensure that the work is being carried out according to the technical specifications of this bidding document, the technical documents in the bidding document and the technical documents that will be furnished to him during the performance of the work and the relevant codes of practice.

25.4 The CONTRACTOR shall provide for purposes of inspection, necessary instruments at his own cost for inspection of work.

25.5 All results of inspection and test will be recorded in the reports, proforma of which will be approved by the Engineer-in-charge. These reports shall form part of the Completion Documents.

25.6 Inspection and acceptance of the work shall not relieve the CONTRACTOR from any of his responsibilities under this contract. Any work not conforming to drawings, specifications codes shall be rejected and Contractor shall carry out rectification at his own cost.

25.7 Cost towards repeat tests and inspection due to failures, repairs etc. for reasons attributable to the CONTRACTOR shall be borne by the CONTRACTOR.

25.8 Various tests as specified in specifications shall be carried out to the entire satisfaction of OWNER/EIL.

26.0 COMPLETION DOCUMENTS

26.1 The CONTRACTOR shall carry out various tests as called for in bidding document either on field or at outside approved laboratories at his own cost. All test results and related documents shall be submitted in 6 (Six) copies as part of completion documents.

26.2 The following documents in addition to documents specified in GCC shall be submitted in hard binder by the CONTRACTOR in 6 (Six) sets, as a part of completion documents:

a) Test Certificate from manufacturers for all supply material.

b) Any other drawing/ document/ report specified elsewhere in the bidding document.

c) Test Certificate, Warranty/Guarantee Certificate and copies of Purchase Order with prices blanked out, from manufacturers for major supply materials.

d) Batch Test Certificate from manufacturers of electrodes.

e) 6 Sets of as built Construction Drawings/ Documents/ Reports.

f) All other requirements as specified in the respective specifications.

26.3 The documents as mentioned in Technical Volume of Bidding Document shall be submitted by the CONTRACTOR.

27.0 HEALTH, SAFETY AND ENVIRONMENT (HSE) MANAGEMENT

27.1 The CONTRACTOR shall adhere to the Health, Safety and Environment (HSE) management system as per EIL Specification No. 6-82-0001 Rev.4, Safety Measures for Electrical Installations during Construction as per Std. No.7-51-0332, enclosed as **Annexure-X to this SCC**.

27.2 The CONTRACTOR shall establish document and maintain an effective Health, Safety and Environment (HSE) management system.

27.3 In case CONTRACTOR fails to follow the instructions of Engineer-in-charge with respect to above clauses, next payment due to him shall not be released till CONTRACTOR complies with the instructions to the full satisfaction of Engineer-in-charge.

27.4 Oil Industry Safety Directorate (OISD) Guidelines – 192 & 207

The Contractor in addition to the safety measures mentioned elsewhere in the Tender document shall comply with Safety Practices during construction as mentioned in OISD Guidelines-192 and Contractor Safety as mentioned in OISD Guidelines-207 enclosed with the Bidding document as **Annexure-X to SCC.**

27.5 In addition to the provisions on Safety specified in the Bidding Documents and other applicable statutory requirements, penalty as per EIL Specification No. 6-82-0001 Rev. 4 shall also be leviable for violations relating to Safety, Health & Environment:

27.6 The CONTRACTOR shall be required to take a suitable Insurance Policy with a view to cover themselves against the above penalties and submit a copy of the said policy to the Engineer-in-Charge before possession of site is given to them.

27.7 Access to Site

The Contractor shall obtain prior permission of the Owner/Engineer-in-Charge before any person not directly connected with the works visits the site. Contractor shall obtain prior permission for his workers gate pass/for materials etc., as may be required to carry out the works inside the plant premises from the Owner/Engineer-in-Charge and shall follow the rules and regulations of CISF/Owner/Engineer-in-Charge which may be enforced from time to time for entry or exit.
Contractor shall make adequate arrangements for uninterrupted working during monsoon season at site.

27.8 Site Facilities

The Contractor shall arrange for the following facilities at site, for workmen deployed/engaged by him/his sub-Contractor, at its own cost.

(i) Arrangement for First Aid.
(ii) Arrangement for clean & portable drinking water.
(iii) Toilet
(iv) Canteen where tea & snacks are available
(v) A creche where 10 or more women workers are having children below the age of 6 years.
(vi) Any other facility/utility as may be required under the Contract.

28.0 COORDINATION WITH OTHER AGENCIES

28.1 Work shall be carried out in such a manner that the work of other agencies operating at the site is not hampered due to any action of the CONTRACTOR. Proper coordination with other agencies will be responsibility of the CONTRACTOR. In case of any dispute, the decision of Engineer-in-Charge shall be final and binding on the CONTRACTOR.

29.0 CLEARANCE OF SITE ON COMPLETION

Upon the issue of the taking-over certificate the Contractor shall clear away and remove from the part of the site to which such taking-over certificate relates all Contractors equipment, surplus material, rubbish and temporary work of every kind and leave such part of the site and works clean and in a workmanlike condition to the satisfaction of the Engineer-in-Charge. Provided that the Contractor shall be entitled to retain on site, until the end of the defects liability period, such materials, Contractors equipment and temporary works as are required by him for the purpose of fulfilling his obligations during the defects liability period.

30.0 ABNORMALLY HIGH UNIT RATES (AHR ITEMS)

Clause No. 20.0 of GCC is modified to the following extent:

In item rate contract where the quoted rates for the items exceed 50% (fifty percent) of the Owner's estimated rates, such items will be considered as

Abnormally High Rates Items (AHR) and payment of AHR items beyond the contracted quantities shall be made at the least of the following rates:

1. Rates as per SOR, quoted by the Contractor.
2. Rate of the item, which shall be derived as follows:
   a) Based on rates of machine and labour as available from the contract (which includes contractor's supervision, profit, overheads and other expenses).
   b) In case rates are not available in the contract, rates will be calculated based on prevailing market rates of machine, material and labour plus 15% (fifteen percent) to cover Contractor's supervision profit, overhead & other expenses.

31.0 BONUS FOR EARLY COMPLETION

The Clause No. 27.3 of General Conditions of Contract shall not be applicable for this work.

32.0 FINAL INSPECTION

32.1 After completion of all tests as per specification the whole work will be subject to a final inspection to ensure that job has been completed as per requirement. If any defects noticed in the work attributable to CONTRACTOR, these shall be attended by the CONTRACTOR at his own cost, as and when they are brought to his notice by the EIL/ OWNER. EIL/ OWNER shall have the right to have these defects rectified at the risk and cost of the CONTRACTOR if he fails to attend to these defects immediately.

33.0 TEST & INSPECTION OF SUPPLY ITEMS

33.1 All inspection and tests on bought out items if any shall be made as required by specifications forming part of this contract. Various stages of inspection and testing shall be identified after receipt of Quality Assurance Programme from the contractor/manufacturer.

33.2 Contractor shall be required to submit recent test certificates for the material being used in works from the recognized laboratories. These certificates should indicate all properties of the materials as required in relevant IS Standards or International Standards. Contractor shall also submit the test certificate with every batch of material supplied which will be approved by Engineer-in-Charge.

33.3 Inspection calls shall be given for association of OWNER/EIL as per mutually agreed programme in prescribed proforma with 15 days margin, giving details of equipment and attaching relevant test certificates and internal inspection report of the contractor. All drawings, general arrangement and other contract drawings, specifications, catalogues etc. pertaining to equipment offered for inspection shall be got approved by OWNER/EIL final copies shall be made available to Owner/EIL before hand for undertaking inspection. The contractor shall ensure full and free access to the inspection engineer of Owner/EIL at the contractor or their sub-contractor's premises at any time during contract period to facilitate him to carry out inspection and testing assignments.

33.4 The contractor/sub-contractor shall provide all instruments, tools, necessary testing and other inspection facilities to inspection engineer of Owner/EIL free of cost for carrying out inspection.

33.5 Where facilities for testing do not exist in the Contractor's/sub-contractor's laboratories, samples and test pieces shall be drawn by the Contractor/ Sub-Contractor in presence of Inspection Engineer of OWNER/EIL and duly sealed by the later and sent for tests in Government approved Test House or any other testing laboratories approved by the Inspection Engineer at the Contractor's cost.

33.6 The Contractor shall comply with the instructions of the Inspection Engineer fully and with promptitude.

33.7 The Contractor shall ensure that the equipment/assemblies/component of the plant and equipment required to be inspected are not assembled or dispatched before inspection.

33.8 The Contractor shall ensure that the parts once rejected by the Inspection Engineer are not used in the manufacture of the plant and equipment. Where parts rejected by the Inspection Engineer have been rectified or altered, such parts shall be segregated for separate inspection and approval, before being used in the work.

33.9 On satisfactory completion of final inspection and testing, all accepted plant and equipment shall be stamped suitably and inspection Certificate shall be issued in requisite copies for all accepted items. For stage inspection and for rejected items, only inspection memo shall be issued indicating therein the details of observations and remarks.

33.10 If Owner or its representative fails to inspect within 30 days after receipt of inspection notice, the Contractor may dispatch material on specific approval of Owner. All inspection and tests shall be made as required by the specifications forming part of this contract. Contractor shall advise EIL in writing at least fifteen days in advance of the date of final inspection/tests. Manufacturer's inspection or testing certificates for equipment and materials supplied may be considered for acceptance, at the discretion of Engineer-in-Charge. All costs towards testing etc. shall be borne by the contractor within their quoted rates.

34.0 MAKE OF MATERIALS

34.1 Wherever an item is specified or described by a particular brand name, manufacturer or vendor, the specific item mentioned shall be for establishing type, function and quality desired. However final acceptance of equipment shall depend upon its conformity with the technical specification laid down in the bidding documents. The make of various materials should either be as specified in the Contract or should be as per EIL/Owner approved vendor list.

35.0 VENDOR LIST FOR CEMENT & STEEL

The contractor shall purchase Steel and Cement from the approved manufacturer or their stockiest as mentioned in **Annexure-XIII of SCC.**

36.0 COMPUTERIZED CONTRACTORS BILLING SYSTEM

36.1 Without prejudice to stipulation in Terms and Conditions of Works Contract, Contractor should follow following billing system.

36.2 The bills will be prepared by the Contractor on their own PCs as per the standard formats and codification scheme proposed by Owner/EIL. The Contractor will be provided with data entry software to capture the relevant billing data for subsequent processing. Contractor will submit these data to Owner/EIL in an electronic media along with the hard copy of the bill, necessary enclosures and

documents. The Contractor will also ensure the correctness and consistency of data so entered with the hard copy of the bill submitted for payment.

36.3 Owner/EIL will utilize these data for processing and verification of the contractor's bill and payment."

37.0 UNDERGROUND AND OVERHEAD STRUCTURES

37.1 The information to possible extent regarding existing structures/ overhead lines, existing pipelines and utilities are already indicated on alignment sheets. Over and above Contractor may encounter other structures/ pipelines/ OFC etc. that may not be appearing on alignment sheet, the Contractor is required to collect such information on his own before commencing the work. The Contractor shall execute the work in such a manner that the said structures, utilities, pipelines etc. are not disturbed or damaged, and shall indemnify and keep indemnified the Owner from and against any destruction thereof or damages thereto.

38.0 MECHANISED CONSTRUCTION

38.1 Contractor shall without prejudice to his overall responsibility to execute and complete the work as per specifications and time schedule adopt as far as practicable, mechanized construction techniques for major site activities. Contractor agrees that he will deploy the required numbers and types of the plant & machinery applicable for different activities in consultation with the Engineer-in-charge during execution of works.

38.2 Contractor further agrees that Contract price is inclusive of all the associated costs, which he may incur for actual mobilization, required in respect of use of mechanised construction techniques and that the Owner/Consultant in this regard shall entertain no claim whatsoever.

39.0 CHECKING OF LEVELS

39.1 The Contractor shall be responsible for checking levels, orientation plan of all foundations, foundation bolts, etc., well in advance of taking up the actual erection work and bring to the notice of Engineer-in-Charge discrepancies, if any. In case of minor variations in levels etc. the Contractor shall carry out the necessary rectifications to the foundations within his quoted price.

39.2 The Contractor shall also be responsible for checking with templates, wherever necessary, the disposition of foundation bolts with the corresponding bases of structure and shall effect rectifications, as directed, within his quoted rate.

40.0 PRICE VARIATION FOR STRUCTURAL STEEL, STEEL PLATES & REINFORCEMENT BAR

The price variation shall be applicable on supply price of bulk steel material for site fabrication/construction for permanent incorporation in work i.e. for structural steel, steel plates & Reinforcement Bar only:

$$Vm = (IR \times Q) \times \frac{M - Mo}{Mo}$$

Where

Vm = Variation in supply price of **structural steel, steel plates & Reinforcement Bar**

IR = Rate of steel items (**structural steel, steel plates & Reinforcement Bar)** declared by SAIL on the due date of submission of bid.

Q = Qty. of Structural Steel, steel plates & Reinforcement Bar executed by Contractor & certified by Engineer-In-Charge.

Mo = All India Wholesale Price Index for Iron & Steel Commodity released by Office of Economic Advisor to Govt. of India, Ministry of Commerce and Industry (as published by RBI) on the last date of submission of bid (including extension in the date if any).

M = All India Wholesale Price Index for Iron & Steel Commodity released by Office of Economic Advisor to Govt. of India, Ministry of Commerce and Industry (as published by RBI) on the date of placement of Purchase Order to Material supplier.

The above price variations shall be applicable only for **structural steel, steel plates & Reinforcement Bar (excluding chequered plate & gratings);** for which purchase orders are placed within 75 % of original time schedule of the contract; reckoned from the date of issue of notification of award and brought to site within original time schedule of the contract. For the materials which are brought at site beyond the above time period, price variation clause shall not be applicable even if the purchase orders are placed within 75 % of original time schedule of the contract.

The purchase orders for all items, for which price variation is applied, as mentioned above, shall be sent to Engineer-In-Charge immediately after placement of purchase order to the vendor, but not later than 7 days after placement of such purchase order.

41.0 CONDITIONS FOR ISSUE AND RECONCILIATION OF MATERIALS

41.1 Free Issue Materials (FIM), if any shall be issued as per terms and conditions set forth in the General Conditions of Contract (GCC) and **Annexure-XI of SCC**, from Owner's Stores or other points of Owner.

41.2 Every month, Contractor shall submit an account for all materials issued by Owner in the proforma prescribed by the Engineer-in-Charge. On completion of work, the Contractor shall submit "Material Appropriation Statement" for all materials issued by the Owner.

41.3 Wherever materials are under Contractor's scope of supply, whether part or in full, for any item of work covered under SOR, no allowances towards wastage/scrap, etc. shall be accounted for.

41.4 The conditions for issue of materials by OWNER and reconciliation of such materials shall be as per Specification No. 7-82-0001 Rev. 0 attached herewith as **Annexure-XI of SCC**. This shall not be applicable for the materials supplied by CONTRACTOR.

42.0 INSURANCES

42.1 Owner will arrange Comprehensive Insurance Policy covering marine, Inland Transit Insurance (in India) and Site Erection/Storage Insurance.

However, Bidder shall carry and maintain any and all other Statutory Insurance(s) required under Indian Laws and Regulations, including Workmen Compensation Act / Employee State Insurance / Third Party Liabilities, etc. and Insurances for their personnel engaged in performance of the work at Contractor's own cost.

42.2 Irrespective of work acceptance, the responsibility to maintain adequate insurance coverage at all times during the period of Contract shall be that of Contractor alone. Contractor's failure in this regard shall not relieve him of any of his responsibilities and obligations under the contract.

42.3 Contractor shall provide the Owner with a copy of all insurance policies and documents taken out by him in pursuance of the Contract. Such copies of documents shall be submitted to the Owner immediately upon the Contractor having taken such insurance coverage. Contractor shall also inform the Owner atleast 60 (Sixty) days in advance regarding the expiry, cancellation and/or changes in any such documents and ensure revalidation/renewal, etc. as may be necessary well in time.

43.0 WATER FILLING & WATER DISPOSAL

43.1 The detailed proposed for the hydrostatic testing shall be furnished by the Contractor alongwith the offer, taking into account the completion schedule. The necessary piping, pumps etc. shall be provided by the Contractor. The final disposal of water after testing shall also be Contractor's responsibility. Suitable drains shall be provided for this purpose as directed by the Engineer-in-Charge. All necessary blind flanges, bolts, nuts etc. for testing shall be supplied by Contractor within his quoted price.

43.2 The final disposal of water after hydrostatic testing shall be the Contractor's responsibility. Suitable drains for this purpose shall be provided by the Contractor as directed by Engineer-in-Charge. Water required for hydro testing shall be arranged by the Contractor and cost of the same shall be deemed to be inclusive in the quoted rates.

44.0 FABRICATION SHED

44.1 Contractor shall provide all weather fabrication sheds at site for all pre-fabrication of piping works and fabrication of structural steel work to the satisfaction of Engineer-in-charge. The requirement of fabrication sheds shall be firmed up in consultation with Engineer-In-Charge for numbers/ size of fabrication shed.

44.2 In case the Contractor fails to establish the fabrication sheds to the satisfaction of Engineer-in-charge, 10% (Ten Percent) payment towards pre-fabrication of piping works and fabrication of structural steel works shall be deducted from RA Bills.

44.3 However, this 10% (Ten Percent) payment shall be released to the CONTRACTOR upon establishing the fabrication sheds to the satisfaction of Engineer-in-Charge.

45.0 WAREHOUSING

45.1 In line with requirements specified in GCC and specifications, material shall be properly stored by Contractor in his warehouse to enable easy traceability, handling and preservation with all material having proper identification marks, colour coding etc. In case Contractor fails to follow the specified requirements, next payment due to the Contractor shall not be released till he complies with all the requirements

46.0 General requirements for RADIOGRAPHY & Other NDT works

46.1 CONTRACTOR shall appoint radiography/NDT agency(ies) only after acceptance of such agency(ies) by OWNER/EIL. However, acceptance of radiography/ NDT agency by OWNER/EIL shall not absolve the CONTRACTOR of his responsibility to execute radiography work as per requirements of the Contract.

46.2 CONTRACTOR shall mobilize Radiography/ NDT agency at site along with adequate number of radiography resources/ NDT equipments & appliances, commensurate with the welding activity and quantum of Radiography/NDT work load to avoid delays in Radiography/ NDT and consequent generation of back log. In the event of generation of back log leading to Delay/ Holdup of subsequent

activities OWNER/EIL has right to engage additional agency for carrying out the radiography at the risk and cost of CONTRACTOR including 100% overhead charge.

46.3 Date and extent of mobilization of radiography/ NDT agency/resources shall be agreed by the CONTRACTOR and the Engineer-in-Charge at the start of work.

46.4 Radiography Check Shots

a) To verify that radiographs are being taken on the prescribed / selected welds / spots only, 5% of already radiographed spots shall be selected by the Engineer-in-Charge or his designated person for check shots. The check shots shall be taken up before any further radiography work.

b) The CONTRACTOR will be paid for the check shots at the quoted rates if no variation is found. If mismatch / variation is found in any of the check shot as per para **45.4 a)**, CONTRACTOR shall have to take re-radiography of the entire lot represented by mismatched check shot (a days production or more as decided by Engineer In-Charge). In such cases, no payment will be made for the check shots as well as the re-radiography of the entire lot represented by the check shot.

c) In the event of any non-matching / variation is observed in re-radiography of the entire lot as per para **45.4 (b)** above with reference to the earlier radiographs taken, the radiography agency shall be forthright debarred from site. CONTRACTOR shall then carryout re-radiography up to maximum of 100% of all the prescribed / selected welds/ spots radiographed by the debarred radiography agency (as per direction of the Engineer In-Charge) at his own cost by engaging a separate Radiography agency acceptable to OWNER/EIL. The process for verification of radiographs through check shots shall be continued as per clause **45.4 (a)** above from the lots selected by the Engineer In- Charge till 2 (two) consecutive lots are found with matching check shot radiographs to the satisfaction of EIL/ OWNER.

47.0 COMPENSATION FOR EXTENDED STAY

47.1 The clause no. 87 (vi) of GCC is modified to the following extent:

47.1.1 In case the time of completion of work is delayed beyond the time schedule indicated in the bidding document plus a grace period equivalent to 1/5th of the time schedule or 8 weeks whichever is more, due to reasons solely attributable to Employer/Consultant, the contractor shall be paid extended stay compensation in order to maintain necessary organizational set up and construction tools, tackles, equipments etc. at site of work. The bidder shall mention the rate for such extended stay compensation per month in the 'Priced Part" which will be considered for evaluation. The period for the purpose of evaluation shall be $1/5^{th}$ of the time schedule or 1 (One) month whichever is less.

47.1.2 In case bidder does not indicate the rate for extended stay compensation as per the proforma in Priced Part, it will be presumed that no extended stay compensation is required to be paid to the contractor.

47.1.3 In case the completion of work is delayed beyond a period of one month after the grace period then both the Employer/Consultant and the Contractor shall mutually decide the future course of action including payment of further extended stay compensation.

47.1.4 Bidder to note that in case they don't indicate the rate for extended stay compensation as per proforma, provisions of clause no. 47.0 will not be applicable for them

48.0 GENERAL GUIDELINES DURING AND BEFORE ERECTION

48.1 CONTRACTOR to study the equipment layout and his scope of work carefully and accordingly workout the erection sequence and execution methodology of various equipments, piping structural and other facilities in the scope.

48.2 Orientation of all foundation, elevations, lengths and disposition of anchor bolts and diameter of holes in the supports saddles shall be checked by contractor, well in advance. Minor rectifications including chipping of foundations as the case may be shall be carried out at no extra cost by the Contractor after obtaining prior approval of the Engineer-in-charge. The Contractor shall also be provided with the necessary structural drawings and piping layouts etc. wherever required for reference. If a structural member needs to be dismantled, to facilitate the equipment erection, same shall be done by the Contractor after ensuring proper stability of main structure with prior permission of Engineer-in-charge. All such dismantled members shall be put in position back after the completion of equipment erection to satisfaction of Engineer-in-charge.

48.3 CONTRACTOR to note that work of other agencies will not be kept under hold for the purpose of release of work front for equipment erection and other works in CONTRACTOR's scope.

48.4 A well planned and feasible erection sequence shall be developed by the CONTRACTOR in such a way that it results into NO HOLD on nearby equipments foundations/civil and structural works or erection of any facility. CONTRACTOR will identify and indicate clearly the detailed erection sequence of various equipments for review / approval of OWNER/ EIL on award of contract.

48.5 The CONTRACTOR shall be responsible for organizing the lifting of the equipment in proper sequence so that orderly progress of the work is ensured and access routes for erecting the other equipments/facilities are kept open.

48.6 CONTRACTOR to mobilize Cranes and other resources, as required, to meet the sequence/ schedule of completion at no extra cost to OWNER.

48.7 The CONTRACTOR will indicate in the bid, the make and model of cranes proposed to be mobilized by him at site to work as main crane and trailing cranes. Erection of equipments by any other means other than cranes is not acceptable. Further, the Erection schemes proposing erection by Tandem lift method, Derrick arrangement, Strand Jack method and guy type crawler crane shall not be considered for any equipment.

48.8 Detailed erection scheme for all critical equipments will be developed and submitted by the CONTRACTOR on award of work for approval of Engineer-in-charge at site. All the Cranes and lifting tackles are subjected to load testing at site / should have valid load test certificates. For the purpose of load testing of cranes, the CONTRACTOR will submit a "Procedure for Load Testing of Cranes" to the Engineer-in-Charge. The actual load testing shall be carried out in accordance with the procedure, as approved by the Engineer-in-Charge. The CONTRACTOR at no extra cost to OWNER will arrange required loads for load testing purpose.

48.9 All lifting tackles to be used during erection shall be appropriately labelled/ stamped for their safe working loads. The safe working loads mentioned on labels/ stamping on lifting tackles will be as per the latest test certificates, which will be made available by CONTRACTOR (in original) before actual use of such lifting tackles at site.

49.0 ACTION IN CASE OF SUBMISSION OF FALSE/FORGED DOCUMENT

49.1.1 Bidder is required to furnish the complete and correct information/ documents required for evaluation of their bids, if the information/ documents forming basis of evaluation is found to be false/ forged, the same shall be considered adequate ground for rejection of bids and forfeiture of Earnest Money Deposit (Bid Security).

49.1.2 In case, the information/ document furnished by the vendor/ contractor forming basis of evaluation of his bid is found to be false/ forged after the award of the contract, GAIL/ BCPL shall have full right to terminate the contract and get the remaining job executed at the risk & cost of such vendor/ contractor without any prejudice to other rights available to GAIL/ BCPL under the contract such as forfeiture of CPBG/ Security Deposit, withholding of payment etc.

49.1.3 Incase this issue of submission of false document comes to the notice after execution of work, GAIL/ BCPL shall have full right to forfeit any amount due to the vendor/ contractor along with forfeiture of CPBG/ Security Deposit furnished by the vendor/ contractor.

49.1.4 Further, such bidder/ vendor/ contractor shall be put on Blacklist/ Holiday List of GAIL/ BCPL debarring them from future business with GAIL/ BCPL.

50.0 SUB-CONTRACT FOR CIVIL AND STRUCTURAL WORKS

50.1 Contractor may sub-contract Civil and Structural Works, to the SUBCONTRACTOR(s) having prior proven experience of similar WORK and on specific approval by OWNER/EIL after award of WORK.

50.2 Following the notification of Acceptance of Bid, the CONTRACTOR will submit to the OWNER for approval their own or sub-contractor's details for Civil and Structural Works as per **Annexure-XII** to SCC. CONTRACTOR shall ensure that very competent and resourceful agencies with proven track record and performance should be proposed for the WORK to be sub-contracted.

51.0 SURPLUS MATERIALS

51.1 Surplus civil construction materials comprising sand, cement, bricks, stones, aggregates and the products of dismantling the Temporary Works erected by the SUB-CONTRACTOR shall vest in and belong to the SUB -CONTRACTOR upon Completion of the Works and/or earlier termination of the Contract for any cause ,with right in the SUB-CONTRACTOR, subject to the other terms & conditions of the Contract, to remove the same from the job Site, subject to satisfactory proof of supply. No other surplus material will be allowed to be removed from the Site and shall be deemed to be the property of owner and the same shall be transported properly to Owner's store or as directed by Owner The Contract Price quoted by the Contractor shall be deemed to include the cost of all surplus materials which are deemed to be the property of Owner.

52.0 CORRUPT AND FRAUDULENT PRACTICES

52.1 Bidders are required to furnish the complete and correct information/ documents required for evaluation of their bids. If the information/ documents forming basis of evaluation is found to be false/ fake/ forged, the same shall be considered adequate ground for rejection of the bids and forfeiture of earnest money deposit.

52.2 OWNER requires that the CONTRACTOR observes the highest standard of ethics during the execution of Contract. In pursuance of this policy, OWNER defines, for the purposes of this provision, the terms set forth below as follows:

a) "Corrupt Practice" means the offering, giving, receiving, or soliciting of anything of value to influence the action of public official in contract execution; and

b) "Fraudulent Practice" means a misrepresentation of facts in order to influence the execution of a Contract to the detriment of OWNER, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive OWNER of the benefits of free and open competition.

c) "False/Fake" means to make or construct falsely. "Faked alibi" is a made, manufactured, or false alibi. Something that is not what is purports to be; counterfeit, an imposter.

d) "Forgery" means the false making or the material altering of a document with the intent to defraud. A signature of a person that is made without the person's consent and without the person otherwise authorizing it. A person is guilty of forgery if, with the purpose to defraud or injure anyone or with knowledge that he is facilitating a fraud or injury to be perpetrated by anyone, the actor (i) alters any writing of another without his authority (ii) makes, completes, authenticates, executes, issues or transfers any writing, so that it purports to be the act of another who did not authorize that act or to have been executed at a time or place or in a numbered sequence other than was in fact the case, or to, be a copy of an original when no such original exists. Utters any writing which he knows to be false in a manner specified in (i) & (ii) above.

ANNEXURES
TO
SPECIAL CONDITIONS
OF
CONTRACT

SCOPE OF WORK

[ANNEXURE - I TO SPECIAL CONDITIONS OF CONTRACT]

SCOPE OF WORK

1.0 The scope of work in general includes scope of work specified in Technical Section and Schedule of Rates enclosed in Commercial Section of the Bidding Document. Further, it includes any other work not specifically mentioned but required to complete the work as per specifications, drawings and instructions of Engineer-in-Charge, which could be reasonably implied from the contents of the Bidding Document.

2.0 Scope of work shall be read in conjunction with item description of Schedule of Rates and Contractor's scope shall include all activities of work specified in the item description of Schedule of Rates.

Rates shall include all cost for the performance of the item considering all parts of the Bidding Document. In case any activity though specifically not covered in description of item under 'Schedule of Rates' but is required to complete the work which could be reasonably implied/inferred from the content of Bidding Document, the cost for carrying out such activity of work shall be deemed to be included in the item rate.

SCOPE OF SUPPLY

[ANNEXURE - II TO SPECIAL CONDITIONS OF CONTRACT]

SCOPE OF SUPPLY

1.0 The Contractor's and Owner's scope of supply shall be as specified in the documents of Technical Volume and Schedule of Rates enclosed with the Bidding Document.

TIME SCHEDULE

[ANNEXURE - III TO SPECIAL CONDITIONS OF CONTRACT]

TIME SCHEDULE

NAME OF WORK	TIME OF COMPLETION
COMPOSITE WORKS FOR RAILWAY SIDING TERMINAL OF M/s BRAHMAPUTRA CRACKER AND POLYMER LIMITED AT LEPETKATA (ASSAM) **(BIDDING DOCUMENT NO. 6907-160-16-43-PK-T-3001)**	**08 (Eight) Months**

Note:

1. The time of completion shall be reckoned from date of issue of Fax of Acceptance (FOA)

2. The time indicated is for completing all the works in all respects as per specifications, codes, drawings and instructions of Engineer-in-Charge and submission of all reports as mentioned in the Technical Specifications.

(STAMP & SIGNATURE OF BIDDER)

MEASUREMENT OF WORK

[ANNEXURE - IV TO SPECIAL CONDITIONS OF CONTRACT]

MEASUREMENT OF WORK

1.0 GENERAL

1.1 The mode of measurement shall be as mentioned in relevant standard specification incorporated in the Bidding Document. Any other mode of measurements not covered in above specifications shall be followed in accordance with relevant BIS codes /Schedule of Rates/ Specifications etc. and/or as decided by Engineer-in-Charge.

1.2 Payment will be made on the basis of joint measurements taken by Contractor and certified by Engineer-in-Charge. Measurement shall be based on "Approved for Construction" drawings, to the extent that the work conforms to the drawings and details are adequate.

1.3 Wherever work is executed based on instructions of Engineer-in-Charge or details are not adequate in the drawings, physical measurements shall be taken by Contractor in the presence of Engineer-in-Charge.

1.4 Measurements of weights shall be in metric tonnes corrected to the nearest Kilogram. Linear measurements shall be in meters corrected to the nearest centimeters.

1.5 The weights mentioned in the drawing or shipping list shall be the basis for payment. If mountings for panels etc. are packed separately, their erection weights shall include all mountings.

1.6 No other payment either for temporary works connected with this Contract or for any other item such as weld, shims, packing plates etc. shall be made. Such items shall be deemed to have been included for in the rates quoted.

1.7 Measurements will be made for various items under schedule of rates on the following basis as indicated in the unit column

i) Weights	MT or Kg
ii) Length	M (Metre)
iii) Number	No.
iv) Volume	Cu.M
v) Area	Sq.M

1.8 Wherever the unit of items has been indicated as lumpsum, the payment shall be made on lumpsum basis on completion & no mode of measurement shall be applicable.

1.9 The measurement for cable laying shall be made on the basis of length actually laid from lug to lug including length of loops provided.

2.0 STRUCTURAL STEEL WORK & MISCELLANEOUS STRUCTURES

2.1 Payment for steel work shall be made on basis of admissible weight of the structure accepted, the weight being determined as described below.

2.2 The weight for payment will be assessed from the approved fabrication drawings and the respective bill of materials prepared by the Contractor and approved by the Engineer-in-Charge. The weight of structural material/Plate shall be calculated wherever necessary on the basis of IS Hand Book. If sections are different from IS Sections, then Manufacturer Hand Book shall be referred to.

2.3 Sections built out of plates/structural shall be paid on the actual weight incorporated except for gussets which will be paid on the weight of the smallest rectangle enclosing the shape.

2.4 Gratings shall be paid on the basis of calculated weights as determined from the dimensions given on the design drawings/bill of materials. Full deduction shall be made for all opening above 300 mm size and skews.

2.5 Welds, bolts, nuts, washers etc. shall not be measured. Rate of structural steel work shall be deemed to include the same.

2.6 No other payment either for temporary works or for any other item such as welds, shims, packing plates etc., shall be made. Such items shall be deemed to have been included in the rate quoted for steel work.

3.0 PIPING

3.1 Mode of Measurement of Piping works is based on Inch. dia of Fabrication and Inch. Meter of Erection of Piping Works

Measurement of above ground and underground piping shall be done in the following manner:

3.1.1 Fabrication of Piping

i) Measurement for fabrication of pipe shall be done on the basis of Inch. dia (the nominal diameter of pipe in 'Inches' multiplied by number of weld joints). All pre-fabrication work (including transportation of materials to site, fit up, shop weld, fabrication of spool pieces for erection) as well as all piping welding in situ are covered in Inch. dia. of fabrication. This shall include all types of BUTT-welding e.g. GTAW, SMAW.

ii) Payment shall be made based on the unit rate against following diameter range of pipes and type of welds, under the headings of pipe metallurgy (CS/AS/SS etc., separately for IBR/NIBR and thickness upto 10 MM/10-20 MM/20-30 MM/30-40MM etc.).

(a) Butt Welds

Upto 1-1/2" NB
2" to 6" NB
8" to 14" NB
16" to 24" NB
26" to 36" NB
38" to 48" NB
50" to 60" NB
Above 60" NB

(b) Fillet Welds

Upto 1-1/2" NB
2" to 6" NB
8" to 14" NB
16" to 24" NB
26" to 36" NB
38" to 48" NB
50" to 60" NB
Above 60" NB

iii) Total welding for slip on flanges shall be accounted as one single joint per flange.

iv) Seal welds, wherever required shall not be counted under weld joints.

v) No separate payment shall be made for welding involved in pipe supports.

vi) Branch welds shall be considered under butt welds

3.1.2 Erection of Piping

i) Measurement will be done based on Inch. Meter (the nominal diameter of pipe in 'Inches' multiplied by the installed length of piping in 'Meters') as per execution drawing. Inch. Meter shall include all work pertaining to Erection of Fabricated spools/straight lengths, providing vent, drains, instrument tapings, alignment, hydro-testing and all other activities required as per item description, but not covered in scope under Inch. dia.

(ii) Payment shall be made based on the unit rate against following diameter range of pipes:

Upto 1-1/2" NB
2" to 6" NB
8" to 14" NB
16" to 24" NB
26" to 36" NB
38" to 48" NB
50" to 60" NB
Above 60" NB

(iii) All lines shall be measured along the centre lines of pipes, curvilinear centre lines of bends and elbows, centre line of flanges and all other fittings such as tees, reducers, expansion joints etc. all in line instruments, line mounted fittings, ejectors, eductors, mixers, sight glasses, trays, filters, desuperheaters etc. Length of all types of valves except socket weld valves upto 1-1/2" shall be excluded in this measurement. However, no separate payment for socket weld valves upto 1-1/2" size shall be made and the quoted rates for piping shall be deemed to include the same.

REMARKS:

1. Measurement of following items shall be in linear Running meter basis/Lumpsum basis, as applicable:

i) Cement lined piping
ii) Rubber lined piping
iii) Teflon lined piping
iv) Plastic piping (HDPE etc.)
v) Galvanised piping
vi) Jacketed piping
vii) Steam Tracers
viii) Tubing

2. Measurement of following items shall be on number basis:
   i) Piping Specials like Mitres & Fabricated Reducers
   ii) Reinforcement pads

3.2 Piping

3.2.1 For measurement and payment of Supply, fabrication and erection of Piping work, only finished item shall be measured. Payment will be based on linear measurements as per execution drawings. No separate measurement shall be made for the activities covered under the description of item for piping work.

i) All lines shall be measured along the centre lines of pipes, curvilinear centre lines of bends and elbows, centre line of flanges and all other fittings such as tees, reducers, expansion joints etc. all in line instruments, line mounted fittings, ejectors, eductors, mixers, sight glasses, tray, filters, desuperheaters etc. All type of valves other than those specifically mentioned in Schedule of Rates shall be excluded from this measurement. However, no separate payment for socket weld valves upto 1½" size shall be made and the quoted rates for piping shall be deemed to include the same.

ii) The socket weld fittings shall be supplied to the Contractor as per the requirements of the drawings. All other hot/cold bends, reducers etc. for size 1-1/2" and below shall be fabricated and erected as per requirements by the Contractor at no additional cost and his rates for piping of size 1-1/2" and below shall be inclusive of this work.

iii) The forged tees shall be supplied to the contractor as per the requirements of the drawings. All other branch connections including reinforcement pads shall be accomplished by pipe to pipe connections. The rates quoted for piping shall be inclusive of making branch connections. The reinforcement pads shall be measured separately.

iv) Vents and drains shall be measured from O.D. of pipe lines and shall be paid for at the corresponding unit rates for similar sizes of pipe. Other piping attachment such as couplings, earthing lugs etc. shall be supplied and erected by the Contractor within his quoted rates for piping. Vents and drains required temporarily for flushing and testing shall be provided by the Contractor at their cost.

v) Fabrication of spool pieces for temporary use to aid Contractor's work such as fabrication, erection, flushing and testing of piping etc. shall be done by Contractor at his cost as part of piping work and no separate payment shall be made for the same.

vi) In case of branch piping, the measurement shall be made from outer surface of the main line except in case of equal size branches, in which case measurement shall be made from centre line of the branching header.

vii) As regards safety valves, size of valves will be identified by inlet pipe size.

viii) Reducers will be paid alongwith piping of larger diameter except in case of funnels where they are welded only to the smaller diameter pipe, for which payment will be made alongwith piping of such smaller dia.

ix) All piping attachments such as couplings, orifice plates, steam traps, strainers, earthing lugs etc. shall be erected by the Contractor as part of piping erection work and no separate payment will be made for the same.

3.3 Erection of Valves

Subject to 3.2 above, all types of valves erection of all types of valves such as gate/globe/ check/ plus/needle/ ball/ control/ safety valves/gate valves/butterfly valves etc. will be paid measured and paid on number basis at the rates given separately in the Schedule of Rates. Any dismantling and re-erection of the valves required for the purpose of testing, calibration etc. will be carried out by the Contractor within his quoted rates. The length of such valves along with companion flanges shall be excluded from piping length.

3.4 Fabrication of Supports

i) If piping supports are to be measured and paid under a separate item, measurement and payment of supply, fabrication and erection of pipe supports shall be on weight basis. Only the finished item shall be measured.

ii) Bolts, nuts and washers including U-bolt will be supplied by Contractor. Weight of bolts, nuts and clamps etc. shall not be added to the weight of pipe support for payment purpose.

iii) Erection of all types of supports, spring supports and turn buckles, including grouting of supports, if required, shall be carried out by the Contractor as part of piping work and no separate measurement and payment will be made for it.

4.0 VESSELS, EXCHANGERS, ETC.

4.1 Payment will be made on weight basis. Weights as indicated on execution drawings will be considered for payment. Where weight is not indicated on the execution drawings, weights as indicated on packing lists will be considered for payment. In case where weights are neither indicated on execution drawings nor on packing list, weight will be calculated. Weld metal weight will not be considered and no deduction will be made towards opening less than 300 mm diameter. Full deductions shall be made for all openings above 300 mm diameters.

4.2 For erection of mounting and accessories such as safety valves with manifold, distance piece, rupture discs, sight glasses, davits etc., including weight of these will be added to that of respective equipments for the purpose of payment.

4.3 Internals etc. measured as actual quantity that has been erected and consumed shall be taken for payment purpose.

5.0 PUMPS, COMPRESSORS AND MISCELLANEOUS EQUIPMENTS:

5.1 Payment will be made on weight basis. Weights as indicated on execution drawings will be considered for payment. Where weights are not indicated on the execution drawings, weights as indicated on packing lists will be considered for payment. In case where weights are neither indicated on execution drawings nor on packing list, weight will be calculated.

5.2 For erection of auxiliaries and accessories, weight of these will be added to that of respective machinery for the purpose of payment.

5.3 If piping for cooling water, lubricating oil, etc. are supplied to the Contractor in prefabricated condition with the machinery, the weights of these will be added to the respective machinery for the purpose of payment. In case these are required to be fabricated and erected by the contractor, these will be paid at the rates applicable for the respective size of piping and in such case the weight of these shall not be added to that of the machinery.

5.4 No separate measurement and payment for supply and application of ordinary/non-shrink grouting shall be made, as the unit rates are inclusive of supply and application of ordinary/non-shrink grouting.

6.0 POST WELD HEAT TREATMENT (IF APPLICABLE)

Payment for post weld heat treatment shall be made on the basis of per circumferential joint for different diameters of pipes as per the rates quoted separately. Repeat post weld heat treatment for repaired joints or otherwise due to Contractor's fault will be carried out at Contractor's cost.

7.0 RADIOGRAPHY / DYE-PENETRANT EXAMINATIONS / MAGNETIC PARTICLE TEST (MPT)

Payment for radiography shall be made on the basis of circumferential joints for different pipe dia. Repeat radiography due to defective films or onrepaired joint due to Contractor's fault or for additional radiography necessitated due to poor performance of Contractor's welder will be done at Contractor's cost.

Magnetic particle and dye penetrant test will be paid on the weld length tested/ circumferential weld joints as mentioned in Schedule of Rates.

8.0 PAINTING ON EQUIPMENTS/PIPING/STRUCTURAL STEEL ETC.

a) <u>EQUIPMENTS</u>

i) For columns, vessels, reactors, Exchangers, furnaces, ejectors etc., measurement shall be on square meter basis taken over the painted surface.

ii) For pumps, motors and compressors measurement shall be made on number basis.

b) PAINTING ON PIPING INCLUDING SPECIALS AND FITTINGS

i) Payment will be made on linear measurement in 'Metres' corrected to the nearest centimeter.

ii) Piping shall be measured along the centre line through all types of fittings and flanges.

iii) Rates for painting of pipes shall be inclusive of painting of all types of pipe supports, flanges, guides, shoes, saddles, clamps, etc and also all types of fittings except valves (2" and above) which shall be paid separately on number basis.

iv) There will be no separate measurements of the colour bands/ identification signs (line numbering), flow direction etc. on uninsulated piping, the rats of painting of linear length of piping shall be inclusive of cost of such items.

c) PAINTING ON STEEL STRUCTURE

i) Payment for steel structures shall be made on the basis of admissible weight of structure painted.

ii) Welds, bolts, nuts, washers etc. shall not be measured and rates for painting of structure shall be inclusive of painting such items.

9.0 PAINTING WORK UNDER INSULATION

a) EQUIPMENTS:

i) For Columns, vessels, reactors, Exchangers, furnaces, ejectors etc., measurement shall be on square meter basis taken over the painted surface.

ii) For pumps, motors and compressors measurement shall be made on number basis.

b) PIPING:

i) Payment will be made on linear measurement in 'Metres' corrected to the nearest centimeter.

ii) Piping shall be measured along the centre line through all types of fittings and flanges.

iii) Rates for painting of pipes shall be inclusive of painting of all types of pipe supports, flanges, guides, shoes, saddles, clamps, etc and also all types of fittings except valves (2" and above) which shall be paid separately on number basis.

iv) There will be no separate measurements of the colour bands/ identification signs (line numbering), flow direction etc. on un-insulated piping, the rates of painting of linear length of piping shall be inclusive of cost of such items.

TERMS OF PAYMENT

[ANNEXURE-V TO SPECIAL CONDITIONS OF CONTRACT]

1.0 MOBILIZATION ADVANCE

1.1 Mobilisation Advance if required by the CONTRACTOR shall be paid as follows :

1.1.1 Recoverable interest bearing Mobilization Advance upto a maximum limit of 10% (ten percent) of the awarded Contract Value carrying an interest rate (medium item) at PLR charged by SBI (applicable as on date of award) plus 2% per annum on reducing balance, shall be paid to the Contractor, in the manner as given below:

5% (Five Percent) of awarded Contract value shall be payable as Mobilization Advance after fulfilling the following formalities by the Contractor:

a) Signing of Contract Agreement by the Contractor.

b) Submission of Performance Contract Security as per provision of Clause No. 24.0 of General Conditions of Contract and valid up to 3 months from the date of completion of work. The clause no. 24.1 stands modified to this extent.

c) Submission of a separate bank guarantee from a Nationalized/Scheduled Bank in proforma approved by OWNER, equivalent to 10% of awarded contract value covering mobilization advance and kept valid up to completion of work.

5% (Five Percent) of awarded Contract Value shall be payable on Construction of Site Office, Storage Shed, Fabrication Yard etc. and Mobilisation of equipments so as to start the work to the entire satisfaction of Engineer-in-Charge.

1.1.2 The Mobilisation Advance together with the interest accrued, shall be recovered from each running account bill @ 15% of gross amount of Monthly R.A. Bill in such a manner that the total advance and interest accrued is recovered when approximately 80% of the contract value gets paid. Balance amount, if any, remaining un-recovered shall be deducted in full from the pre-final bill. However, the Contractor may opt for a higher percentage of recovery of Mobilisation Advance together with the interest accrued form their RA Bills.

1.1.3 The Mobilization Advance paid to the Contractor shall be used for execution of this Contract only and the Contractor shall satisfy OWNER/ Engineer-in-Charge in this regard whenever required. If it is found that the said advance has been utilized by the Contractor in whole or part for any other purpose, OWNER may at its discretion forthwith recall the entire advance or such amount thereof as outstanding and without prejudice to any other right or remedy available to OWNER, recover the same by recourse to any Bank Guarantee.

2.0 SECURED ADVANCE ON MATERIALS

2.1 In case of items for complete works involving both supply and its erection, contractor may be allowed “Secured Advance” on the security of materials brought to site for execution of the contracted items of work to the extent of 75% of the value of materials which go into the completed works as assessed by the Engineer-in-Charge provided that the materials are of an imperishable nature and that formal agreement is drawn up with the contractor under which the Owner secures a lien on the materials and is safe guarded against loses due to the contractor postponing the execution of the work or to the improper storage &/or misuse of the materials and against the expenses entitled for their proper watch and safe custody. Recoveries of advances so made would from the running account bills for work done as the materials are used. The necessary deductions

shall be made whenever the items of work in which they are used and billed for. The deductions shall be made in such a way that the entire advance is recovered upto the pre-final bill.

3.0 ON ACCOUNT PAYMENTS

Progress Payments shall be released to Contractor against monthly running account bills duly certified by Engineer-in-charge after affecting the necessary deductions/recovery of mobilisation advance including interest charges accrued thereon. The basis for payment against various items shall be below:

3.1 Erection of Equipment and Piping

3.1.1 Columns, Drums, Vessels, Filters, Ejectors etc.

- 65% after the equipments are transported and erected on foundations
- 25% after the equipments are aligned and grouted
- 5% after the equipments are internally cleaned, inspected, boxing up of manholes, providing all instruments/auxiliary fit ups complete for start-up.
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

3.1.2 Trays and Internals

- 95% after transportation, cleaning, placing/bolting/welding within equipments and inspection.
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

3.1.3 Heat Exchangers

i) Erection of Exchangers

- 65% after the exchangers are transported and erected on foundation.
- 20% after exchangers are aligned and grouted
- 10% after completion of flushing, draining, drying by compressed air.
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

ii) Testing of Heat Exchangers

- 95% after completion of tests and acceptance by the Engineer-in-Charge.
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

3.1.4 **Pumps and Miscellaneous Machineries**

- 45% after the equipments are transported and placed in position/foundations.
- 30% after initial alignment, levelling and grouting/bolting.
- 20% after final alignment and shaft alignment after pipe hook-up, dowelling, initial fill of lubricants, mounting of accessories, piping complete to prepare for trial run.
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

3.1.5 **Fabrication & Erection of Piping**

3.1.5.1 PIPING WORKS BASED ON INCH DIA OF FABRICATION AND INCH METER OF ERECTION FOR PIPING MATERIALS SUPPLIED BY OWNER/EIL AS FREE ISSUE

A. Piping Fabrication Works

1.1 Under Ground Piping

- 30% on joint fit up of spools and released for welding of joints.
- 65% on joints welding, radiography and other examinations, repairs of welds, repeat radiography, extensions and penalty shots if any, making the spools ready for erection.
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

1.2 Above Ground Piping

- 30% on joint fit up of spools, completing traceability records (if applicable) and released for welding of joints
- 65% on joints welding, radiography and other examinations, repairs of welds, repeat radiography, extensions and penalty shots if any, making the spools ready for erection.
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

B. Piping Erection Works

2.1 Under Ground Piping

- 30% on pre-testing, coating & wrapping of pre fabricated pipes.
- 45% on trenching, laying in position, field welding, jointing, radiography and ready for hydro testing.

- 20% on hydro testing, drying, (if applicable) and back filling of trenches.

- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

2.2 Above Ground Piping

- 50% on site erection, providing pipe supports and alignment.

- 35% on in-situ welding, radiography and other examination, repairs of welds, repeat radiography, penalty shots, if any,.providing hanger & spring supports, vents, drains, completing PMI (if applicable) and making ready for hydro testing.

- 10% on hydro testing, draining and drying of lines.

- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

3.1.5.2 PIPING WORKS BASED ON FABRICATION & ERECTION OF PIPING FOR PIPING MATERIALS SUPPLIED BY OWNER/EIL AS FREE ISSUE

A. Above Ground Piping

- 55% after piping is fabricated (welding should be completed as per the directions of the Engineer-in-Charge).

- 30% after site erection, including providing of supports, vents, drains, etc. alignment and welding, including completion of radiographic and other examination, repairs of welds, if any, repeat radiography and other examination complete to obtain mechanical completion of the lines / systems.

- 10% after lines are flushed, tested, drained, dried by compressed air and obtaining statutory approvals (if applicable).

- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

B. Under Ground Piping

- 55% after the piping is prefabricated including providing vents, drains, couplings etc. and coating and wrapping and testing as per specifications.

- 30% after excavation, laying, alignment and welding of field joints, inspection and repairs, if any to the welding are carried out.

- 10% after lines are flushed and pressure tested, rectification if any, is carried out, retested, drained and air dried by compressed air and field joints are coated and wrapped and trenches are back filled.

- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

3.1.5.3 PIPING WORKS BASED ON SUPPLY, FABRICATION & ERECTION OF PIPING FOR PIPING MATERIALS SUPPLIED BY CONTRACTOR

A. Above Ground Piping

- 60% on supply and acceptance of material at site.
- 10% after fabrication of piping
- 20% after erection, supporting, vent, drains, alignment, welding, radiography/testing etc. complete to obtain mechanical completion and ready for flushing
- 5% after flushing, testing, draining, drying and statutory approvals.
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

B. Under Ground Piping

- 60% on supply and acceptance of material at site.
- 25% after fabrication, coating, wrapping, laying in position, jointing and ready for flushing
- 10% after flushing, testing and back-filling of trenches.
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

3.1.6 **Fabrication of Specials, Mitres, etc.**

- 95% after fabrication, testing and inspection and final approval.
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

3.1.7 **Pipe Supports where material is supplied by Owner**

- 95% on fabrication and Erection.
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

3.1.8 **Pipe Supports where material is supplied by Contractor**

- 60% on supply and acceptance of material at site.
- 15% on fabrication
- 20% on erection, alignment, welding, painting etc.

- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

3.1.9 **Wooden Supports**

- 70% after supply and fabrication as per specification
- 25% after erection in position as supports
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

3.1.10 **Erection of all types of valves**

- 85% after transportation and erection including provision of supports.
- 10% after flushing and testing.
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

3.1.11 **Stress Relieving, Radiography, Magnetic Particle Examinations**

- 95% on completion of individual items of work in all respects and inspection and acceptance by Engineer-in-charge.
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

3.1.12 **Concrete Pedestal**

- 95% on completion of pedestal in all respects.
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

3.1.13 **Insulation/ Refractory works**

- 50% progressive payment after receipt of material at site.
- 45% after installation in all respect
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

3.2 <u>Civil and Structural works</u>

3.2.1 **Civil Works**

- 95% on completion of work on prorata basis as certified in monthly progress bill.
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

3.2.2 **Structural steel work**

- 5% on finalisation of quantities, plan and approval of fabrication drawings.
- 55% on supply and acceptance of material at site.
- 15% on fabrication
- 20% on erection, alignment, welding, painting etc.
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

3.3 <u>Painting works under Insulation</u>

- 30% after surface preparation & primer painting.
- 65% after final painting.
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

3.4 <u>Any Other Work (Not covered above).</u>

- 95% on completion of work on prorata basis as certified in monthly progress bill.
- 5% after completion of work in all respects and acceptance by Engineer-in-charge.

NOTE:

1. The above progress payments are subject to deductions towards income tax, mobilisation advance and other deductions as applicable as per terms of the Contract.
2. Further break-up of above payment terms, if deemed necessary for any progressive payment of individual items may be mutually arrived at by Engineer-in-Charge and Contractor.

ATTACHMENT-A

ITEMS QUALIFYING FOR SECURED ADVANCE

CATEGORY : 'A'

ITEMS AGAINST WHICH SECURED ADVANCE CAN BE GRANTED

A.1 Civil

i) Finished Doors and windows.
ii) Pipes and sanitary fittings of GI, CI, SCI and HCL.
iii) M.S. Gratings,
iv) Reinforcement bars
v) Structural steel.
vi) Anchor bolts.
vii) Pre-coated GI Sheet/GI Sheet.

A.2 Electrical

i) Steel Conduit
ii) G.I. Pipes
iii) Switchgears (Other than oil filled)
iv) Light poles (Steel)
v) Cable Trays
vi) Structural Steel
vii) In Boxes/Control Gears/DB's/Receptacles
viii) RCC Cable Ducts

A.3 Mechanical

i) Structural steel
ii) Plates
iii) Pipes/Pipe fittings
iv) Gratings.
v) Valves, Hydrants, monitors
vi) Aluminium sheet

A.4 Instrumentation

i) Structural steel
ii) M.S. Sheet/G.I. Sheets
iii) Prefabricated trays
iv) Pipes/Tubes/fittings.

CATEGORY : 'B'

ITEMS AGAINST WHICH SECURED ADVANCE CAN BE MADE AFTER OBTAINING INSURANCE COVER FROM THE CONTRACTOR

B.1 Civil

i) Glazed tiles, terrazo tiles and similar articles.
ii) Marble/Kota Stone/Granite slabs.
iii) Asbestos cement products
iv) Sanitary fittings and pipes of S.W. Porcelin and chinaware materials.
v) Laminated/safety one way vision and Bullet proof glasses.
vi) Paints, Varnishes, Distempers pigment, spirit.
vii) Ceiling and false flooring frames and tiles etc.
viii) PVC water storage tanks, PVC tiles, PVC water bar etc.

B.2 Electrical

i) Transformers
ii) Switchgears (Oil filled)
iii) L.T. & H.T. Cables
iv) Fans
v) Storage & Dry Batteries
vi) Cable/Jointing/Termination Kits
vii) Electric light fittings.
viii) Flexible wires
ix) PVC materials.
x) Capacitor banks

B.3 Mechanical

i) Bitumen
ii) Wrapping & Coating material
iii) Primer/Paints
iv) Foam/Foam seal material
v) Guniting material
vi) Insulation & Refractory materials other than bricks.

B.4 Instrumentation

i) SS/Copper Tubes
ii) SS/Brass Compression fittings
iii) Control/Signal Cables
iv) Junction boxes/Marshalling boxes
v) Control panels.

QUALITY MANAGEMENT SYSTEM

[ANNEXURE – VI TO SPECIAL CONDITIONS OF CONTRACT]

बोलीकर्ता से गुणवत्ता प्रबंधन प्रणाली अपेक्षाओं हेतु विनिर्देश

SPECIFICATION FOR QUALITY MANAGEMENT SYSTEM REQUIREMENTS FROM BIDDERS

Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standard Bureau Chairman
					Approved by	
0	04.06.09	Issued as Standard Specification	QMS Standards Committee	QMS Standards Committee	SCT	ND

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Abbreviations:

MR	-	Material Requisition
PR	-	Purchase Requisition
PO	-	Purchase Order
QA	-	Quality Assurance
QMS	-	Quality Management System
ISO	-	International Organization for Standardization
CV	-	Curriculum Vitae

QMS Standards Committee

Convenor: Mr. S.C. Tyagi

Members:
Mr. Chandra Kant (Insp.)
Mr. R.K. Trivedi (Engg.)
Mr. R.K. Sabharwal (C&P)
Mr. M.P. Jain (Projects)
Mr. Ravindra Kumar (Const.)
Mr. Mukesh Meena (CQA)

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Attachment

Format for Concession/Deviation Permit : Format No.5-0000-0180-F1

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1.0 SCOPE

This specification establishes the Quality Management System requirements to be met by BIDDER for following purpose:

- QMS requirements to be met by suppliers/contractors after award of work/during contract execution.

2.0 DEFINITIONS

2.1 Bidder

For the purpose of this specification, the word "BIDDER" means the person(s), firm, company or organization who is under the process of being contracted by EIL / Owner for delivery of some products (including service). The word is considered synonymous to supplier, contractor or vendor.

2.2 Project Quality Plan

Document tailored from Standard Quality Management System Manual of BIDDER, specifying how the quality requirements of the project will be met.

2.3 Owner

Owner means the owner of the project for which services / products are being purchased and includes their representatives, successors and assignees.

3.0 REFERENCE DOCUMENTS

6-78-0002	Specification for Documentation Requirements from Contractors
6-78-0003	Specification for Documentation Requirements from Suppliers

4.0 QUALITY MANAGEMENT SYSTEM – GENERAL

Unless otherwise agreed with EIL / Owner, the BIDDER proposed quality system shall fully satisfy all relevant requirements of ISO 9001 "Quality Management Systems – Requirements." Evidence of compliance shall be current certificate of quality system registration to ISO 9001 or a recent compliance audit recommending registration from a registrar. The quality system shall provide the planned and systematic control of all quality related activities for execution of contract. Implementation of the system shall be in accordance with BIDDER'S Quality Manual and PROJECT specific Quality Plan.

5.0 QUALITY SYSTEM REQUIREMENTS

5.1 BIDDER shall ensure that the responsible authority for execution of the order / contract has communicated the PO / contract requirements including any identified or intended statutory and regulatory requirements to all concerned in their organization and sub-contractor's organization who are contributing to the execution of the PO/ contract.

5.2 BIDDER shall establish a documented Quality Policy and Quality Objectives to achieve the specified and intended requirement of PO / contract.

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5.3 BIDDER shall identify and communicate the responsibilities and authorities of the personnel contributing to the execution of the PO / contract.

5.4 BIDDER shall deploy competent and trained personnel for various activities for fulfillment of PO / contract. BIDDER shall arrange adequate infrastructure and work environment to ensure that the specification and quality of the deliverable are maintained.

5.5 BIDDER shall do the quality planning for all activities involved in delivery of order. The quality planning shall cover as minimum the following:

- Resources
- Product / deliverable characteristics to be controlled.
- Process characteristics to ensure the identified product characteristics are realized
- Identification of any measurement requirements, acceptance criteria
- Records to be generated
- Need for any documented procedure

The quality planning shall result into the quality assurance plan, inspection and test plans (ITPs) and job procedures for the project activities in the scope of bidder. These documents shall be submitted to EIL/Owner for review/approval, before commencement of work.

5.6 Requirements for sub-contracting / purchasing of services specified in contract / tender shall be adhered to. Wherever requirements are not specified, the sub-contractor shall establish and maintain a system for purchasing / sub-contracting to ensure that purchased product / service conforms to specified requirements. Criteria for selection of sub-contractor, evaluation, re-evaluation, maintenance of purchasing data and verification of purchased product (sub-contractor services), constitute important components of this requirement.

5.7 BIDDER shall plan and carry production and service provision under controlled conditions. Controlled conditions shall include, as applicable

a) the availability of information that describes the characteristics of the product
b) the availability of work instructions
c) the use of suitable equipment
d) the availability and use of monitoring and measuring devices
e) the implementation of monitoring and measurement
f) the implementation of release, delivery and post delivery activities

5.8 BIDDER shall validate any processes for production and service provision where resulting output cannot be verified by subsequent monitoring and measurement. This includes any process where deficiencies become apparent only after the product is in use or service has been delivered.

5.9 BIDDER shall establish a system for identification and traceability of product / deliverable throughout product realization. Product status with respect to inspection and testing requirements shall be identified.

5.10 BIDDER shall identify, verify, protect and safeguard EIL / Owner property (material / document) provided for use or incorporation into the product. If any Owner / EIL property is lost, damaged or otherwise found to be unsuitable for use, this shall be reported to the EIL / Owner.

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5.11 BIDDER shall preserve the conformity of product / deliverable during internal processing and delivery to the intended destination. Requirements mentioned in the tender shall be adhered to.

5.12 BIDDER shall establish system to ensure that inspection and testing activities are carried out in a manner that is consistent with the inspection and testing requirements. Where necessary, measuring equipments shall be calibrated at specified frequency, against national or international measurement standards; where no such standard exists, the basis used for calibration shall be recorded. The measuring equipments shall be adjusted or re-adjusted as necessary, identified to enable the calibration status to be determined. The measuring equipments shall be protected from damage during handling, maintenance and storage.

5.13 BIDDER shall ensure effective monitoring, using suitable methods, of the processes involved in production and other related processes for delivery of the scope of contract.

5.14 BIDDER shall monitor and measure the characteristics of the product/deliverable to verify that product requirement has been met. The inspection (stage as well as final) by BIDDER and EIL / Owner personnel shall be carried out strictly as per the ITPs forming part of the contract. Product release or service delivery shall not proceed until the planned arrangements have been satisfactorily completed, unless otherwise approved by relevant authority and where applicable by Owner / EIL.

5.15 BIDDER shall establish and maintain a documented procedure to ensure that the product which does not conform to requirements is identified and controlled to prevent its unintended use or delivery

5.16 All non-conformities (NCs) / deficiencies found by the BIDDER'S inspection / surveillance staff shall be duly recorded, including their disposal action shall be recorded and resolved suitably. Effective corrective and preventive action shall be implemented by the BIDDER so that similar NCs including deficiencies do not recur.

5.17 All deficiencies noticed and reported by EIL / Owner shall be analyzed by the BIDDER and appropriate corrective and preventive actions shall be implemented. BIDDER shall intimate EIL / Owner of all such corrective and preventive action implemented by him.

5.18 BIDDER should follow the standards, specifications and approved drawings. Concessions/Deviations shall be allowed only in case of unavoidable circumstances. In such situations Concession/deviation request must be made by the BIDDER in attached Format No. 5-0000-0180-F1.

5.19 BIDDER shall have documented procedure for control of documents.

5.20 All project records shall be carefully kept, maintained and protected for any damage or loss until the project completion, then handed over to EIL / Owner as per contract requirement (Refer Specification Nos. 6-78-0002 - Specification for Documentation Requirements from Contractors and 6-78-0003 - Specification for Documentation Requirements from Suppliers), or disposed as per relevant project procedure.

5.21 BIDDER shall prepare and submit for review and approval, Project Quality Plan / Quality Assurance Plan for contracted scope / job. The BIDDER'S Quality Plan shall address all of the applicable elements of ISO 9001, identify responsible parties within BIDDER'S organization, for the implementation / control of each area, reference the applicable procedures used to control / assure each area, and verify the documents produced for each area. The Project Quality Plan shall necessarily define control or make reference to the relevant procedures, for design and engineering, purchase, documentation, record control, bid evaluation, inspection, production/manufacturing, preservation, packaging and storage,

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quality control at construction site, pre-commissioning, commissioning and handing over (as applicable) in line with contract requirement and scope of work.

6.0 AUDITS

BIDDER shall plan and carry out the QMS audit for the job. Quality audit programme shall cover design, procurement, construction management and commissioning as applicable including activities carried out by sub-vendors and sub-contractors. This shall be additional to the certification body surveillance audits carried out under BIDDER'S own ISO 9001 certification scheme.

The audit programmes and audit reports shall be submitted to EIL / Owner as per specified documentation requirements. EIL or Owner's representative reserves the right to attend, as a witness, any audit conducted during the execution of the WORKS.

In addition to above EIL, Owner and third party appointed by EIL/Owner may also perform Quality and Technical compliance audits. BIDDER shall provide assistance and access to their systems and sub-contractor / vendor systems as required for this purpose. Any deficiencies noted shall be immediately rectified by BIDDER.

7.0 DOCUMENTATION REQUIREMENTS

BIDDER shall submit following QMS documents immediately after award of work (Within one week) for record / review by EIL / Owner.

- Organization chart (for complete organization structure and for the project)
- Project Quality Plan/Quality Assurance Plan
- Job specific Inspection Test Plans
- Job Procedures
- Inspection/Test Formats

In addition to above QMS documents, following documentation shall be maintained by the BIDDER for submission to EIL / Owner on demand at any point of time during execution of the project.

- Quality Manual
- CVs of the personnel in BIDDER'S QA Organogram
- Certificate of approval for compliance to ISO: 9001 standard
- Procedure for Control of Non-conforming Product
- Procedure for Control of Documents
- Sample audit report of the QMS internal and external audits conducted during last one year
- Customer satisfaction reports from at least 2 customers, during the last one year
- Project audit report
- Corrective action report on the project audits
- Technical audit reports for the project

Documents as specified above are minimum requirements. BIDDER shall submit any other document/data required for completion of the job as per EIL/Owner instructions.

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CONCESSION/DEVIATION PERMIT

(USE ONLY THIS PAGE FOR COMMUNCIATION WITH VENDOR/CONTRACTOR)

To BE FILLED BY ORIGINATOR

Project_____	Originator Ref._____
Job No._____ Equipment Title_____	Order/Contract No._____ Item No._____

Originator: Vendor/Contractor _____

Caution : Originator to note that any delay in processing of concession/deviation permit shall be to originator's account and shall not be used as a reason for extension in delivery

Requirement as per specification	Description of Concession/Deviation sought

Why the Concession/Deviation is required?
Supporting evidence/calculations enclosed/not enclosed

Contractual implications if Concession/Deviation is granted:

* Time impact	More/Less/No change
* Cost impact	More/Less/No change
* Performance Warranty/Guarantee	Affected/Not affected

Under present constraints requested Concession/deviation is most optimum for the project and does not involve any hazard, and shall meet the stipulated performance requirements.

Date:

Signature
Vendor /Contractor (with seal)

Decision on Concession/Deviation including decision, on time and cost implications

(To be filled by the Inspection engineer [at RPO/HO] or RCM, responsible for conveying the decision to the originator, after resolution)

Date:

Signature_____

Location :

Name_____

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Opinion from EIL site supervisor/inspection engineer
(Specify whether post-facto approval required for regularization)

Date :_____

Name :_____
RPO/Site Name_____

Original forward to :_____
(Target division/department/group)

Copy to :_____
(Project Manager)

Date :_____

Name :_____

Disposal by target division/department

Whether any vendor/contractor made 'Technically not Acceptable' during bid evaluation, on the aspect of which this concession/deviation is sought----------YES/NO

Date :_____

Name :_____

Final decision of Project Manager along with overall review
(Client's decision required/not required)

Date :_____

Name :_____

Client's decision, if required

Date :_____

Signature :_____
Name :_____

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ठेकेदारों से प्रलेखन अपेक्षाओं हेतु विनिर्देश

SPECIFICATION FOR DOCUMENTATION REQUIREMENTS FROM CONTRACTORS

Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
					Approved by	
0	04.06.09	Issued as Standard Specification	QMS Standards Committee	QMS Standards Committee	SCT	ND

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Abbreviations:

HOD	-	Head of Division / Department
QMS	-	Quality Management System
MOU	-	Memorandum of Understanding
EDMS	-	Electronic Document Management System
FOA	-	Fax of Acceptance
LOA	-	Letter of Acceptance
ITP	-	Inspection and Test Plan
URL	-	Universal Resource Locator

QMS Standards Committee

Convenor: Mr. S.C. Tyagi

Members:
Mr. Chandra Kant (Insp.)
Mr. R.K. Trivedi (Engg.)
Mr. R.K. Sabharwal (C&P)
Mr. M.P. Jain (Projects)
Mr. Ravindra Kumar (Const.)
Mr. Mukesh Meena (CQA)

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Attachments

Format for Drawing/Documentation Transmittal	:	Format No. 3-78-0001
Format for Drawing/Documentation Schedule	:	Format No. 3-78-0002
Format for Comments Resolution sheet	:	Format No. 3-78-0003
Format for completeness of Final Documentation	:	Format No. 3-78-0004

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1.0 SCOPE

This specification establishes the Documentation Requirements from Contractors

All documents/data against the Tender / Contract shall be developed and submitted to EIL/Owner by the contractor for review / records, in line with this specification.

2.0 DEFINITIONS

2.1 Contractor

For the purpose of this specification, the word "CONTRACTOR" means the person(s), firm, company or organization who is under the process of being contracted by EIL / Owner for delivery of some products and services. The word is considered synonymous to bidder, supplier or vendor.

2.2 Owner

Owner means the owner of the project for which services / products are being purchased and includes their representatives, successors and assignees.

3.0 REFERENCE DOCUMENTS

6-78-0001	Specification for Quality Management System Requirements from Bidders

4.0 DOCUMENTATION REQUIREMENTS

4.1 Documents/Data to be Submitted by the Contractor

4.1.1 The contractor shall submit the documents and data against the Tender/Contract as per the list specified in respective Tender/Contract.

4.1.2 Review of the contractor drawings by EIL would be only to review the compatibility with basic designs and concepts and in no way absolve the contractor of his responsibility/contractual obligation to comply with Tender/Contract requirements, applicable codes, specifications and statutory rules/regulations. Any error/deficiency noticed during any stage of manufacturing/execution/installation shall be promptly corrected by the contractor without any extra cost or time, whether or not comments on the same were received from EIL during the drawing review stage.

4.1.3 Unless otherwise specified, submission of documents for Review/Records shall commence as follows from the date of Fax of Intent /Letter of Intent:

QMS - 1week
Drawing/Document Index - 2weeks
Other Documents/Drawings - As per approved Drawing/Document Index/Schedule

4.1.4 Documents as specified in Tender/Contract are minimum requirements. Contractor shall submit any other document/data required for completion of the job as per EIL/Owner instructions.

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4.2 Style and Formatting

4.2.1 All Documents shall be in ENGLISH language and in M.K.S System of units.

4.2.2 A blank space measuring 75 mm (W) x 38 mm (H) shall be provided on the body of all contractor drawings for marking of review codes by EIL.

4.2.3 Before forwarding the drawings and documents, contractor shall ensure that the following information are properly entered in each drawing:

Tender Number
Name of Equipment / Package
Equipment / Package Tag No.
Name of Project
Owner
Main Contractor (if work is sub-contracted)
Drawing / Document Title
Drawing / Document No.
Drawing / Document Revision No. and Date
Transmittal Number
EIL Vendor Print No.
(In case of second & subsequent Revisions)

Note: EIL "Vendor Print Number" is to be picked up from the EIL Review Code Stamp affixed on the previous revision.

4.3 Review and Approval of Documents by Contractor

4.3.1 The Drawing/Documents shall be reviewed, checked, approved and duly signed/stamped by contractor before submission. Revision number shall be changed during submission of the revised contractor documents and all revisions shall be highlighted by clouds. Whenever the contractor require any sub- contractor drawings to be reviewed by EIL, the same shall be submitted by the contractor after duly reviewed, approved and stamped by the contractor. Direct submission of sub- contractor's drawings without contractor's approval shall not be entertained.

4.4 Document Category

4.4.1 Review Category

Following review codes shall be used for review of contractor Drawings/Documents:

Review Code 1	-	No comments.
Review Code 2	-	Proceed with manufacture/fabrication as per commented document. Revised document required
Review Code 3	-	Document does not conform to basic requirements as marked. Resubmit for review
R	-	Retained for Records.
V	-	Void

4.4.2 Records Category

Documents under this category are meant for EIL records. These documents would not be returned to contractor. However, comments, if any, will be communicated to contractor.

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4.5 Methodology for Submission of Documents to EIL/Owner

4.5.1 Submission of Soft Copy of Drawings/Documents

Soft copy of drawings/documents and data shall be uploaded on the EIL EDMS Portal. The detail guidelines for uploading documents on EIL EDMS Portal are available on following URL

http://edocx.eil.co.in/vportal

4.5.2 Submission of Hard Copy of Drawings/Documents

Required number of hard copies of drawings/documents shall be submitted as per Tender/Contract along with drawing/document transmittal, Format for Drawing/Document Transmittal (Format No. 3-78-0001) is attached with this specification.

4.5.3 Designated Authority for Submission of Drawings/Documents

Drawings/Documents shall be submitted to the designated authority of EIL/Owner as per Tender/Contract or as communicated to the contractor during kick off meeting or subsequent correspondences.

4.5.4 Drawing/Document Schedule

Contractor shall submit total index of drawings/documents required for review/records based on Tender/Contract along with schedule date of submission of each drawing/document. The drawing schedule shall be submitted in Format No. 3-78-0002 for approval of EIL/Owner. The drawing schedule shall be specific with regard to drawing/document no., the exact title and size of the drawing/document. For submission of drawing schedule, the contractor shall proceed based on Tender/Contract and subsequent correspondence. With each submission of drawings/documents, contractor shall submit updated index with schedule v/s actual submission dates, status of drawings, revision no., date, of approval etc. Any submission without index shall not be entertained for review. It shall be ensured that proper sequencing of the drawings/documents to be submitted is maintained in the drawing schedule.

4.5.5 Schedule and Progress Reporting

Contractor shall submit monthly progress report and updated procurement, engineering and manufacturing status (schedule vs. actual) every month. First report shall be submitted within 2 weeks from FOA/LOA. In case of exigencies, EIL/Owner can ask for report submission as required on weekly/fortnightly/adhoc basis depending upon supply status and contractor shall furnish such reports promptly without any price implication. Format for progress report shall be submitted by the contractor during kick off meeting or within one week of receiving FOA/LOA, whichever is earlier.

4.5.6 Quality Assurance Plan/Inspection and Test Plan

Inspection and test plans attached if any, to the tender are generic and indicative only. Immediately after receipt of the order, contractor shall submit within one week of receiving FOA/LOA, job specific ITPS based on the indicative ITPs. Further, contractor shall also submit Quality Assurance Plan for project activities in the scope of contract, starting from manufacturing to handing over/ commissioning, these plans shall cover/identify the activities, relevant procedure, if any, code of conformance, resources for performance and checking/monitoring, approval requirements and authority, records to be generated and audit scope by EIL/Owner.

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4.5.7 **Inspection Release Note (IRN)**

Contractor shall ensure that all documents viz. documents reviewed, manufacture's test certificate etc., mentioned in Inspection Release Note(IRN), issued by EIL/third party against the materials supplied by contractor., are sent to EIL along with the IRN.

IRN shall be issued by EIL Inspector/ third party inspection agency only after all the drawings/documents as per contractor's index of drawings/documents are submitted and are accepted under review code-1. Material/Equipments dispatch from contractor's/sub vender's works shall not commence till above condition is met.

Note: Non fulfilling above requirement shall result into appropriate penalty or with- holding of payment as per conditions of Tender/Contract.

4.5.8 **Statutory Approvals**

Wherever approval by any statutory body is required to be taken by contractor, the contractor shall submit copy of approval by the authority to EIL.

4.5.9 **Comments Resolution Sheets**

While re-submitting drawings/documents the contractor shall confirm whether all comments have been incorporated, through a comments resolution sheet (As per attached format No. 3-78-0004). If any comments are not incorporated or excluded, then reason or justification for the same shall be furnished in comments resolution sheet

4.5.10 **Multi Sheet Documents**

Multi sheet documents other than drawings shall be submitted in their entirety in the event of a re-submission, even if only few sheets are revised.

4.6 Final Documentation

4.6.1 **As built Drawings**

Shop/Site changes made by contractor after approval of drawings under 'Code 1' by EIL and deviations granted in deviation permits, if any, shall be marked in hard copies of drawings which shall then be stamped 'As-built' by the contractor. These 'As-built' drawings shall be reviewed and stamped by EIL Inspector/Site engineer also. Format for completeness of final documents (Format No. 3-78-0005) is attached with this specification. Contractor shall prepare scanned images files of all marked – up 'As – built' drawings. Simultaneously contractor shall incorporate the shop/site changes in the native soft files of the drawings also.

4.6.2 **As built Final Documents**

As built final documents shall be submitted as listed in Tender/Contract.

4.6.3 **Packing/Presentation of Final Documents**

Final Documents shall be legible photocopies in A4, A3 size only. Drawings will be inserted in plastic pockets (both sides transparent, sheet thickness minimum 0.1 mm) with an extra strip of 12 mm wide for punching so that drawings are well placed.

Final Documentation shall be bound in hard board plastic folder(s) of size 265 mm x 315 mm ($10^{1}/_{2}$ inch x $12^{1}/_{2}$ inch) and shall not be more that 75 mm thick. It may be of several volumes

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and each volume shall have a volume number, index of volumes and index of contents of that particular volume. Where number of volumes are more, 90mm thickness can be used. Each volume shall have top PVC sheet of minimum 0.15 mm thick duly fixed and pressed on folder cover and will have 2 lever clip. In case of imported items documents, 4 lever clip shall also be accepted. All four corners of folders shall be properly metal clamped. Indexing of contents with page numbering must be incorporated by contractor. Spiral/Spico bound documents shall not be acceptable. As mentioned above, books should be in hard board plastic folders with sheets punched and having 2/4 lever clips arrangement.

Each volume shall contain on cover a title block indicating Tender No., name of project, name of customer, package equipment tag no. & name (if applicable). Each volume will have hard front cover and a reinforced spine to fit thickness of book. These spines will also have the title printed on them. Title shall include also volume number (say 11 of 15) etc.

4.6.4 **Submission of Soft copies**

Contractor shall submit to EIL, the scanned images files as well as the native files of drawings/documents, along with proper index.

In addition to hard copies, contractor shall submit electronic file (CD-ROM) covering soft copies of all the final drawings and documents, all text documents prepared on computer, scanned images of all important documents (not available as soft files), all relevant catalogues, manuals available as soft files (editable copies of drawings/text documents, while for catalogues/manuals/proprietary information and data PDF files can be furnished).

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DRAWING/DOCUMENT TRANSMITTAL SHEET

CONTRACTOR'S VENDOR'S LOGO ETC.
PL. DO NOT CHANGE LOCATION OR EXCEED THIS SPACE

PR/TENDER NO.	:	**JOB NO.**	:
CONTRACTORS/VENDOR'S NAME	:	**PROJECT**	:
EIL LOI/PO NO.	:	**CLIENT**	:
CONTRACTOR'S VENDOR'S LETTER NO.	:	**DATE**	:

S. NO.	DRAWING/DOCUMENT NO.	REV.	SHEET	TOTAL	DRAWING/DOCUMENT TITLE	CATEGORY	NO. OF COPIES	EQUIPMENT NO.

CATEGORY CODES:
R- Drawings which are required to be reviewed by EIL
I – Drawings which are to be submitted for EIL record

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CONTRACTOR'S/VENDOR'S DRAWING/DOCUMENT SCHEDULE

EIL JOB NO. :
CONTRACTOR'S/VENDOR'S NAME :
EIL LOI/PO NO. :
DATE :
CLIENT :

PROJECT

CONTRACTOR'S/VENDOR'S NAME, LOGO ETC.
PL. DO NOT CHANGE LOCATION OR EXCEED THIS SPACE

SL. NO.	CONTRACTOR'S/ VENDOR'S DRAWING/DOCUMENT NO.	REV.	SHEET NO.	TOTAL NO. OF SHEETS	DRAWING/ DOCUMENT TITLE	CATEGORY	DISCIPLINE	SCHEDULE DATE OF SUBMISSION	AFC/ FINAL ISSUE DATE	SUB VENDOR	PACKAGE/ UNIT

CATEGORY CODES:
R – Drawings which are required to be reviewed by EIL.
I – Drawings which are to be submitted for EIL record.

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Comment Resolution Sheet

Job. No._____

Project Title_____

Drawing/Document No._____

Revision No._____

S. NO.	EIL Comment	Incorporated Resolution	Remarks

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COMPLETENESS OF FINAL DOCUMENTATION

Name of Supplier/Contractor :

Customer :

Project :

EIL's Job No. :

Purchase Order No./ Contract No. :

Purchase Requisition No./ Tender No. :

Rev. No. :

Name of the Work/ Equipment :

Tag. No. :

Supplier's/ Contractor's Works Order No. :

Certified that the Engineering Documents/ Manufacturing & Test Certificates submitted by the supplier are complete in accordance with the Supplier Data Requirements of Purchase Requisition.

Signature	:	Signature	: .....
Date	:	Date	: .....
Name	:	Name	: .....
Designation	:	Designation	: .....
Department	:	Department	: .....
	Supplier/Contractor		EIL

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SITE ORGANISATION

[ANNEXURE - VII TO SPECIAL CONDITIONS OF CONTRACT]

MINIMUM MANPOWER TO BE MOBILIZED BY THE CONTRACTOR FOR COMPOSITE WORKS FOR RAILWAY SIDING TERMINAL AT LEPETKATA (ASSAM)

(BIDDING DOC. NO. 6907-160-16-43-PK-T-3001)

SL. NO.	DESCRIPTION	NOS.
1.	RCM / SITE-IN-CHARGE	1
2.	LEAD DISCIPLINE ENGINEER - CIVIL & STRUCTURAL - MECHANICAL	 1 2
3.	LEAD PLANNING ENGINEER	1
4.	LEAD QA/QC ENGINEER	1
5.	LEAD WELDING / NDT ENGINEER	1
6.	LEAD SAFETY OFFICER	1 As per HSE Spec. 6-82-0001
7.	W/H IN-CHARGE/ MATERIALS MANAGER	1
8.	QUANTITY SURVEYOR	1
9.	DISCIPLINE ENGINEERS/ SUPERVISORS - CIVIL & STRUCTURAL - MECHANICAL - WELDING / NDT - STORE KEEPER - SAFETY	 2 3 2 2 2

NOTES

1) The details of minimum manpower required to be mobilized by the contractor at peak to complete the work within schedule is given above. Contractor is required to augment the above list with additional numbers/categories of personnel as required and/or directed by Engineer-In charge to complete the work within the completion time schedule and quoted price.

2) The Key Personnel identified above shall be well qualified & having adequate relevant experience, as specified in document No. 9-1940-0001 enclosed elsewhere in the Bidding Document. The other manpower shall also be qualified and experienced with their assigned work.

3) CVs of key persons proposed to be deployed shall be submitted to Owner/Engineer-In-charge prior to their mobilization at site. The mobilization of key personnel shall be done at site subject to prior approval of their CVs by Owner/Engineer-In-charge.

4) Following manpower to be mobilized within 15 days of award of work:

RCM/Site-in-charge:	1 No
Lead Mechanical Engineer:	1 No
Planning Engineer:	1 No
QA/QC Manager:	1 No
Safety Officer:	1 No
Warehouse in-charge:	1 No

(STAMP & SIGNATURE OF BIDDER)

QUALIFICATION & EXPERIENCE REQUIREMENT OF KEY CONSTRUCTION PERSONNEL AND PENALTY FOR THEIR NON-MOBILISATION

[ANNEXURE - VIII TO SPECIAL CONDITIONS OF CONTRACT]

CATEGORY	QUALIFICATION & EXPERIENCE REQUIRED			
Resident Construction Manager/ Resident Engineer/Site-In-Charge	Degree or Diploma in Engineering with minimum following relevant experience in construction:			
	Contract value (Rs) →	< 5 Cr. works	5-20 Cr. works	> 20 Cr. works
	Degree holders	5 yrs	10 yrs	15 yrs
	Diploma holders	8 yrs	13 yrs	20 yrs
Lead Discipline Engineer (Mechanical, Civil, Electrical, Instrumentation)	Degree or Diploma in relevant Engineering discipline with following minimum experience in Construction:			
	Contract value (Rs) →	≤ 20 Cr. works	> 20 Cr. works	
	Degree holders	5 yrs	10 yrs	
	Diploma holders	8 yrs	13 yrs	
Lead Welding/ NDT Engineer	Degree or Diploma in Mechanical Engineering/ Metallurgy with the following experience in Welding & NDT (Non Destructive Testing) plus Level-II in RT (Radiographic Testing) (refer Note 1 also):			
	Contract value (Rs) →	≤ 20 Cr. Works	> 20 Cr. Works	
	Degree holders	5 yrs	10 yrs	
	Diploma holders	8 yrs	13 yrs	
Lead QA/QC Engineer	Degree in Engineering with following experience (refer Note 2 also):			
	Contract value (Rs) →	≤ 20 Cr. Works	> 20 Cr. Works	
	Experience	5 yrs of construction experience of which 2 years should be as QA Manager	10 yrs of construction experience of which 3 years should be as QA Manager	
Lead Planning Engineer	Degree in Engineering with following experience in Planning & Scheduling:			
	Contract value (Rs) →	≤ 20 Cr. works	> 20 Cr. works	
	Experience	5 yrs.	10 yrs.	
Safety Officer	As per clause 3.1.4 of EIL standard specification for HSE Management at construction sites (No. xxxx-/6-82-0001) enclosed elsewhere in the bid			
Warehouse- In- Charge/ Materials Manager	Diploma in Engineering or Diploma in Materials Management or Graduate in any stream with min. following experience in Warehousing/ Stores Management:			
	Contract value (Rs) →	≤ 20 Cr. works	> 20 Cr. works	
	Experience	5 yrs.	10 yrs.	
Quantity Surveyor	Degree or Diploma in Engineering with minimum following experience in quantity estimation, field measurement, rate analysis, bill preparation etc. in Construction field:			
	Contract value (Rs) →	≤ 20 Cr. works	> 20 Cr. works	
	Degree holders	2 yrs.	5 yrs.	
	Diploma holders	5 yrs.	10 yrs.	
Discipline Engineer	Degree in relevant Engineering Discipline with minimum 2 years of experience in construction or Diploma in relevant Engineering Discipline with minimum 4 years of experience in Construction.			

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Notes: (for Table on previous page)

1. For Mechanical, Composite, EPC or EPCC Contracts of value more than Rupees 20 crores, the Lead Welding/NDT Engineers shall also possess Certified Welding Inspector qualification from American Welding Society or CSWIP3.1 Welding Inspector qualification from The Welding Institute, UK.
2. For Mechanical, Composite, EPC or EPCC Contracts of value more than Rupees 20 crores, the Lead QA/QC Engineer shall also be a qualified internal auditor for ISO 9001.
3. CVs of key construction personnel proposed to be deployed shall be submitted to Owner/Engineer-in-Charge prior to their mobilization at site. The mobilization of key personnel shall be done at site subject to prior approval of their CVs by Owner/Engineer-in-Charge.

PENALTY FOR NON - MOBILIZATION OF KEY CONSTRUCTION PERSONNEL

I) Penalty for non-mobilization per day per person after the contractual mobilization period unless agreed otherwise by the Engineer-in-Charge:

- Rs. 5000/- for Resident Construction Manager/ Resident Engineer/ Site-in-Charge;
- Rs. 3000/- for Lead QA/QC Engineer, Lead Planning Engineer, Lead Safety Officer and Warehouse In-charge

II) Penalty for non-mobilization per day per person after completion of the mobilization period agreed during the Kick off Meeting:

- Rs. 3000/- for Lead Discipline Engineer, Lead Welding/ NDT Engineer and the Quantity Surveyor

Notes: (for Penalty clauses)

a) All intervening off days (Sundays etc.) and holidays will be counted for levy of penalty

b) Mobilized personnel shall not be demobilized till contractual completion or based on consent of Engineer-in-Charge else penalties as above shall be applied.

c) Total of above penalties shall not exceed 3% of the contract value.

d) The above penalties are over & above all other contractual provisions for late mobilization of resources.

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MINIMUM EQUIPMENT, TOOLS & TACKLES

[ANNEXURE - IX TO SPECIAL CONDITIONS OF CONTRACT]

MINIMUM EQUIPMENTS, TOOLS & TACKLES TO BE MOBILIZED BY THE CONTRACTOR FOR COMPOSITE WORKS FOR RAILWAY SIDING TERMINAL AT LEPETKATA (ASSAM)
(BIDDING DOC. NO. 6907-160-16-43-PK-T-3001)

SL. NO.	EQUIPMENT DESCRIPTION	CAPACITY	MINIMUM REQUIREMENT DURING CONSTRUCTION
1.	CRANE	75 – 100 MT	1
2.	CRANE	40 – 50 MT	1
3.	HYDRA	10 – 18 MT	2
4.	JCB		1
5.	DUMPER	15 TON	1
6.	TRACTOR TRAILER		2
7.	TRANSIT MIXER (IF NOT PROVIDED BY THE RMC SUPPLIER)		1
8.	NEEDLE VIBRATORS		4
9.	WATER TANKERS		1
10.	THEODOLITE	1 SEC	1
11.	DUMPY / AUTO LEVEL		1
12.	D.G. SET	65 – 125 KVA	AS REQUIRED
13.	PLATE COMPACTOR		2
14.	TOOLS AND TACKLES FOR SHORING AND STRUTTING		AS REQUIRED
15.	DEWATERING PUMPS	5 HP	2
16.	TIG WELDING MACHINE		2
17.	DIESEL WELDING MACHINE	400 AMPS	3
18.	WELDING MACHINE		AS REQUIRED
19.	GRINDING MACHINE		AS REQUIRED
20.	TOOLS & TACKLES FOR TAPE COATING		AS REQUIRED
21.	HOLIDAY TESTER		AS REQUIRED
22.	JACK HAMMER		1
23.	AIR COMPRESSOR	250-300 CFM	1
24.	GAS CUTTING SET		AS REQUIRED
25.	AUTO BEVEL CUTTING MACHINE		2
26.	BLAST CLEANING EQPT.		2
27.	SPRAY PAINTING M/C. (AIR LESS)		2
28.	RADIOGRAPHY SET		1
29.	GAMMA RAY		1
30.	X-RAY (IF APPLICABLE)		1
31.	S.R. MACHINE WITH RECORDER		1
32.	TOOLS AND TACKLES FOR DPT/MPT		AS REQUIRED

SL. NO.	EQUIPMENT DESCRIPTION	CAPACITY	MINIMUM REQUIREMENT DURING CONSTRUCTION
33.	WATER FILLING PUMP	HEAD 120 M	1
34.	HYDROTEST PUMP (MOTORISED)	250 Kg/cm^2	1
35.	HYDROTEST PUMP (MOTORISED)	50 Kg/cm^2	1
36.	BOLT TENSIONER(S) – to cover sizes as per SOQ		1
37.	ALLOY ANALYSER (PORTABLE)		1
38.	TORQUE WRENCH FOR BOLT TIGHTENING OF FLANGES	ALL SIZES	1 SET
39.	POWER HACKSAW		1
40.	ULTRASONIC TESTING MACHINE		1
41.	PORTABLE HARDNESS TEST METER		1
42.	MOUNTED DRILLING MACHINE		1
43.	EQUIPMENT FOR CHEMICAL CLEANING & PASSIVATION		1 SET
44.	PIPE BENDING MACHINE		1
45.	SAFETY VALVE TEST JIGS		1
46.	PRESSURE GAUGES OF DIFFERENT RANGE		AS REQUIRED
47.	LABORATORY EQUIPMENT		AS REQUIRED

NOTES :

1. The details of minimum critical equipments in good working condition, required to be mobilized at peak by the Contractor, to complete the work within the schedule is given. The actual deployment schedule of Construction Equipments shall be approved by Engineer-in-charge. Contractor shall augment the above list with additional numbers/categories of equipments, tools & tackles, as required and directed by Engineer-In charge to complete the work within the completion time schedule and quoted price.

2. Contractor to confirm that the above minimum equipments are available with him in good working condition and shall be timely mobilized on this project site. Contractor has the option to hire some of these equipments from equipment-hiring agencies also.

3. Owner/EIL reserves the right to physically check & verify the availability of these equipments prior to award of work.

4. Contractor shall replace any defective/damaged equipments promptly to complete the work without any time & cost implication to the Owner/EIL.

(STAMP & SIGNATURE OF BIDDER)

HEALTH, SAFETY AND ENVIRONMENT MANAGEMENT

[ANNEXURE – X TO SPECIAL CONDITIONS OF CONTRACT]

निर्माण स्थल पर

स्वास्थ्य, सुरक्षा एवं पर्यावरण

प्रबंधन मानक विनिर्देशन

STANDARD SPECIFICATION FOR

HEALTH, SAFETY & ENVIRONMENT

(HSE) MANAGEMENT

AT CONSTRUCTION SITES

Rev	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
					Approved by	
5	19/12/2012	REVISED & UPDATED	SM	SM	RKD	DM
4	13/02/2008	REVISED & UPDATED	AS	RK	SCB	VC
3	17/07/2007	REVISED & UPDATED	AS	MPJ	VNP	VC
2	11/08/2005	REVISED & UPDATED	MPJ	MPJ	VNP	VJN
1	29/05/2003	REVISED & UPDATED	AS	MPJ	HOD(C)	SKG
0	19/07/2002	ISSUED AS STANDARD SPECIFICATIDN	AB	MPJ	HOD(C)	GRR

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Abbreviations

AERB	:	Atomic Energy Regulatory Board
ANSI	:	American National Standards Institute
BARC	:	Bhabha Atomic Research Centre
BS	:	British Standard
EIL	:	Engineers India Limited
ELCB	:	Earth Leakage Circuit Breaker
EPC	:	Engineering, Procurement and Construction
EPCC	:	Engineering, Procurement, Construction and Commissioning
ESI	:	Employee State Insurance
GCC	:	General Conditions of Contract
GM	:	General Manager
GTAW	:	Gas Tungsten Arc Welding
HOD	:	Head of Department
HSE	:	Health, Safety & Environment
HV	:	High Voltage
IS	:	Indian Standard
IE	:	Indian Electricity
JSA	:	Job Safety Analysis
LOTO	:	Lock Out & Tag Out
LPG	:	Liquefied Petroleum Gas
LSTK	:	Lump Sum Turn Key
MV	:	Medium Voltage
PPE	:	Personal Protective Equipment
RCM	:	Resident Construction Manager or Site-in-Charge, as applicable
ROW	:	Right of Way
SCC	:	Special Conditions of Contract
SLI	:	Safe Load Indicator
TBM	:	Tool Box Talks

Construction Standards Committee

Convenor : Sh. RK Das, ED(Construction)

Members : Sh. SK Kaul, GM (C&P)
Sh. M.P. Jain, GM (CRA & HSE)
Sh Rakesh Nanda, DGM (Piping)
Sh. S Mukherjee, DGM (Construction)
Sh. B Chakraborty, AGM (Construction)

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Attachments (Reporting Formats)

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II.	Accident/Incident Report	HSE-2 Rev.0
III.	Suppl. Accident/Incident Investigation Report	HSE-3 Rev.0
IV.	Near Miss Incident Report/Dangerous occurence	HSE-4 Rev.0
V.	Monthly HSE Report	HSE-5 Rev.0
VI.	Permit for Working at height	HSE-6 Rev.0
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IX.	Permit for Demolishing/ Dismantling	HSE-9 Rev.0
X.	Daily Safety Checklist	HSE-10 Rev.0
XI.	Housekeeping assessment & compliance	HSE-11 Rev.0
XII.	Inspection of temporary electrical booth / installation	HSE-12 Rev.0
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XVI.	Permit Energy Isolation & De-Isolation	HSE-16 Rev 0
XVII.	Permit for Excavation	HSE-17 Rev 0

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1.0 SCOPE

This specification establishes the Health, Safety and Environment (HSE) management requirement to be complied by Contractors/ Vendors including their sub-contractors/ sub vendors during construction.

This specification is not intended to replace the necessary professional judgment needed to design & implement an effective HSE system for construction activities and the contractor is expected to fulfill HSE requirements in this specification as a minimum. It is expected that contractor shall implement best HSE practices beyond whatever are mentioned in this specification.

Requirements stipulated in this specification shall supplement the requirements of HSE Management given in relevant Act(s)/legislations, General Conditions of Contract (GCC), Special Conditions of Contract (SCC) and Job (Technical) Specifications. Where different documents stipulate different requirements, the most stringent shall apply.

2.0 REFERENCES

The document should be read in conjunction with following:

- General Conditions of Contract (GCC)
- Special Conditions of Contract (SCC)
- Building and other construction workers Act,
- Indian Factories Act
- Job (Technical) specifications
- Relevant International / National Codes (refer Appendix-A for standards/codes on HSE)
- Relevant State & National Statutory requirements.
- Operating Manuals Recommendation of Manufacturer of various construction Machineries

3.0 REQUIREMENTS OF HEALTH, SAFETY & ENVIRONMENT (HSE) MANAGEMENT SYSTEM TO BE COMPLIED BY BIDDERS

3.1 Management Responsibility

3.1.1 HSE Policy & Objectives

The Contractor should have a documented HSE policy duly & objectives to demonstrate commitment of their organization to ensure health, safety and environment aspects in their line of operations.

HSE Policy of the contractor shall be made available to Owner / EIL at the place of execution of specific contract works, as a valid document.

3.1.2 Management System

The HSE management system of the Contractor shall cover the HSE requirements & commitments to fulfill them, including but not limited to what are specified under clause 1.0 and 2.0 above. The Contractor shall obtain the approval of its site specific HSE Plan from EIL / Owner prior to commencement of any site works. Corporate as well as Site management of the Contractor shall ensure compliance of their HSE Plan at work sites in its entirety & in true spirit.

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3.1.3 **Indemnification**

Contractor shall indemnify & hold harmless, Owner/EIL & their representatives, free from any and all liabilities arising out of non-fulfillment of HSE requirements or its consequences.

3.1.4 **Deployment & Qualifications of Safety Personnel**

The Contractor shall designate/deploy various categories of HSE personnel at site as indicated below in sufficient number. In no case, deployment of safety Supervisor / Safety Steward shall substitute deployment of Safety Officer / Safety Engr what is indicated in relevant statute of BOCW Act i.e deployment of safety officer/Safety Engineer is compulsory at project site. The Safety supervisors, Safety stewards etc. would facilitate the HSE tasks at grass root level for construction sites and shall assist Safety Officer / Engineers.

a) Safety Steward

For every 250 workmen, one safety steward shall be deployed.

As a minimum, he shall preferably possess High School leaving Certificate (of Class XII with Physics & Chemistry etc.) and trained in fire-fighting as well as in safety/occupational health related subjects, with minimum two year of practical experience in construction work environment and preferably have adequate knowledge of the language spoken by majority of the workers at the construction site.

b) Safety Supervisor

For every 500workmen, one safety Supervisor shall be deployed.

As a minimum, he shall possess a recognized Degree in Science (with Physics & Chemistry) or a diploma in Engg. or Tech. with minimum Two years of practical experience in construction work environment and should possess requisite skills to deal with construction safety & fire related day-to-day issues.

c) Safety Officer / Safety Engineer

One for every 1000 workers or part thereof shall be deployed.

Safety officer/Engineer Should Possess following Qualification & Experience :

(i) Recognized degree in any branch of Engg. or Tech. or Architecture with practical experience of working in a building or other construction work in supervisory capacity for a period of not less than two years, **or** possessing recognized diploma in any branch of Engg. or Tech with practical experience of building or other construction work in supervisory capacity for a period of not less than five years.

(ii) Recognized degree or diploma in Industrial safety with one paper in Construction Safety

(iii) Preferably have adequate knowledge of the language spoken by majority of the workers at the construction site.

Alternately

(i) Person possessing Graduation Degree in Science with Physics & Chemistry and degree or diploma in Industrial Safety (from any Indian institutes recognized by AICTE or State Council of Tech. Education of any Indian

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State) with practical experience of working in a building, plant or other construction works (as Safety Officer, in line with Indian Factories Act, 1958) for a period of not less than five years, may be considered as Safety Officer, in case Owner/Client of the project agrees for /approves the same.

d) HSE In-Charge

In case there is more than one Safety Officer at any project construction site, one of them, who is senior most by experience (in HSE discipline), may be designated as HSE In-Charge. Duties & responsibilities of such person shall be commensurate with that of relevant statute and primarily to coordinate with top management of Client and contractors.

In case the statutory requirements i.e. State or Central Acts and / or Rules as applicable like the Building and Other Construction Workers' Regulation of Employment and Conditions of Service- Act,1996 or State Rules (wherever notified), the Factories Act, 1948 or Rules (wherever notified), etc. are more stringent than above clarifications, the same shall be followed.

Contractors shall ensure physical availability of safety personnel at the place of specific work location, where Hot Work Permit is required / granted. No work shall be started at any of the project sites until above safety personnel & concerned Site Engineer of Contractor are physically deployed at site. The Contractor shall submit a HSE organogram clearly indicating the lines of responsibility and reporting system and elaborate the responsibilities of safety personnel in their HSE Plan.

The Contractor shall verify & authenticate credentials of such safety personnel and furnish Bio-Data/ Resume/ Curriculum Vitae of the safety personnel as above for EIL/Owner's approval, at least 1 month before the mobilization. The Contractor, whenever required, shall arrange submission of original testimonials/certificates of their Safety personnel, to EIL/Owner (for verification/scrutiny, etc.)

Imposition / Realization of penalty shall not absolve the Contractor from his/her responsibility of deploying competent safety officer at site.
Adequate planning and deployment of safety personnel shall be ensured by the Contractor so that field activities do not get affected because of non-deployment of competent & qualified safety people in appropriate numbers.

3.1.5 Implementation, Inspection / Monitoring

- The Contractor shall be fully responsible for planning, reporting, implementing and monitoring all HSE requirements and compliance of all laws & statutory requirements.
- The Contractor shall also ensure that the HSE requirements are clearly understood & implemented conscientiously by their site personnel at all levels at site.
- The Contractor shall ensure physical presence of their field engineers / supervisors, during the continuation of their contract works / site activities including all material transportation activities. Physical absence of experienced field engineers / supervisors of Contractor at critical work spot during the course of work, may invite severe penalization as per the discretion of EIC, including halting / stoppage of work.
- Contractor shall furnish their annual Inspection Plan, with regard to project issues /subjects, frequency and performers to EIL/Owner.
- The Contractor shall regularly review inspection report internally and implement all practical steps / actions for improving the status continuously.
- The Contractor shall ensure important safety checks right from beginning of works at every work site locations and to this effect format No: HSE-10 "Daily Safety Check List" shall be prepared by field engineer & duly checked by safety personnel for conformance.

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- The Contractor shall carry out inspection to identify various unsafe conditions of work sites/machinery/equipments as well as unsafe acts on the part of workmen/supervisor/engineer while carrying out different project related works.
- Adequate records for all inspections shall be maintained by the Contractor and the same shall be furnished to EIL/Owner, whenever sought.
- The Contractor shall not carry-out work by engaging single worker anywhere without any supervisor anytime during day or night.
- To demonstrate involvement/commitment of site management of Contractor, at least one Safety Walk through in a month shall be carried out by Contractor's head of site (along with his area manager/field engineers) and a report shall be furnished to EIL/Owner as per format No: HSE-1" Safety walk through report" followed by compliance for unsatisfactory remarks.
- As a general practice lifting tools/tackles, machinery, accessories etc. shall be inspected, tested and examined by competent people (approved by concerned State authorities) before being used at site and also at periodical interval (e.g. during replacement,extension, modification, elongation/reduction of machine/parts, etc.) as per relevant statutes. Hydra, cranes, lifting machinery, mobile equipments / machinery / vehicles, etc. shall be inspected regularly by only competent / experienced personnel at site and requisite records for such inspections shall be maintained by every contractor. Contractor shall also maintain records of maintenance of all other site machinery (e.g. generators, rectifiers, compressors, cutters, etc.) & portable tools/equipments being used at project related works (e.g. drills, abrasive wheels, punches, chisels, spanners, etc.). The Contractor shall not make use of arbitrarily fabricated 'derricks' at project site for lifting / lowering of construction materials.
- Site facilities /temporary. installations, e.g. batching plant, cement godown, DG-room, temporary electrical panels/distribution boards, shot-blasting booth, fabrication yards, etc. and site welfare facilities, like labour colonies, canteen/pantry, rest-shelters, motor cycle/bicycle-shed, site washing facilities, First-aid centers, urinals/toilets, etc. should be periodically inspected by Contractor (preferably utilizing HR/Admn. personnel to inspect site welfare facilities) and records to be maintained.

3.1.6 Behaviour Based Safety

- The contractor shall develop a system to implement Behaviour-Based Safety (BBS) through which work groups can identify, measure and change the behaviours of employees and workers
- The BBS process shall include the following:
  - Identify the behaviours critical to obtaining required safety performance.
  - Communicate the behaviours and how they are performed correctly to all
  - Observe the work force and record safe/at risk behaviours. Intervene with workers to give positive reinforcement when safe behaviours are observed. Provide coaching/correction when at risk behaviours are observed
  - Collect and record observation data
  - Summarize and analyze observation data
  - Communicate observation data and analysis results to all employees
  - Provide recognition or celebrate when safe behaviour improvements occur
  - Change behaviours to be observed or change activators or change consequences as appropriate.
  - Communicate any changes to workforce
- Contractor through its own HSE committee shall implement the above process.
- The necessary procedures and reporting formats shall be developed by the contractor for approval by EIL/Owner.
- The HSE committee of contractor shall observe individual's behavior for safe practices adapted for utilization/execution of work for following as a minimum:-
  - PPE
  - Tools & equipment
  - Hazard Identification & control

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- House keeping
- Confined space entry
- Hot works
- Excavation
- Loading & unloading
- Work At height
- Stacking & storage
- Ergonomics
- Procedures

3.1.7 **Awareness and Motivation**

- The Contractor shall promote and develop awareness on Health, Safety and Environment protection among all personnel working for the Contractor.
- Regular awareness programs and fabrication shop / work site meetings at least on monthly basis shall be arranged on HSE activities to cover hazards/risks involved in various operations during construction.
- Contractor to motivate & encourage the workmen & supervisory staff by issuing / awarding them with tokens/ gifts/ mementos/ monetary incentives / certificates, etc.
- Contractor shall assess & recognize the behavioral change of its site engineers / supervisors periodically and constantly motivate / encourage them to implement HSE practices at project works

3.1.8 **Fire Prevention & First-Aid**

- The Contractor shall arrange suitable First-aid measures such as First Aid Box (Refer Appendix-B for details), trained personnel/nurse (male) to administer First Aid, stand-by Ambulance vehicle and
- The Contractor shall arrange installation of fire protection measures such as adequate number of steel buckets with sand & water and adequate number of appropriate portable fire extinguishers (Refer Appendix-C for details) to the satisfaction of EIL/Owner.
- The Contractor shall deploy trained supervisory personnel / field engineers to cater to any emergency situation.
- In case the number of workers exceeds 500, the Contractor shall position an Ambulance / vehicle and nurse on round the clock basis very close to the worksite.
- The Contractor shall arrange FIRE DRILL at each site at least once in three months, involving site workmen and site supervisory personnel & engineers. The Contractor shall maintain adequate record of such fire drills at project site

3.1.9 **Documentation**

The Contractor shall evolve a comprehensive, planned and documented system covering the following as a minimum for implementation and monitoring of the HSE requirements and the same shall be submitted for approval by owner/EIL.

- HSE Organogram
- Site specific HSE Plan
- Safety Procedures, forms and Checklist. Indicative list of HSE procedures is attached as Appendix :H
- Inspections and Test Plan
- Risk Assessment & Job Safety Analysis for critical works.

- The monitoring for implementation shall be done by regular inspections and compliance of the observations thereof. The Contractor shall get similar HSE requirements implemented at his sub-contractor(s) work site/office. However, compliance of HSE requirements shall

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be the responsibility of the Contractor. Any review/approval by EIL/Owner shall not absolve contractor of his responsibility/liability in relation to fulfilling all HSE requirements.

3.1.10 **Audit**

The Contractor shall submit an Audit Plan to EIL/Owner indicating the type of audits and covering following as minimum:

- Internal HSE audits regularly at least on quarterly–basis by engaging internal qualified auditors (viz safety officers/Construction personnel having 5 years experience in construction safety and Lead Auditor Course :OSHA 18001certification).
- External HSE audits regularly at least on every six months by engaging qualified external auditors (viz safety officers/Construction personnel having 10 years experience in construction safety and Lead Auditor Course :OSHA 18001certification).

All HSE shortfalls/ non-conformances on HSE matters brought out during review/audit, shall be resolved forthwith (generally within a week) by Contractor & compliance report shall be submitted to EIL/Owner.

In addition to above audits by contractor, the contractor's work shall be subjected to HSE audit by EIL/Owner at any point of time during the pendency of contract. The CONTRACTOR shall take all actions required to comply with the findings of the Audit Report and issue regular Compliance Reports for the same to OWNER/ EIL till all the findings of the Audit Report are fully complied.

Failure to carry-out HSE Audits & its compliance (internal & external) by Contractor, shall invite penalization.

3.1.11 **Meetings**

- The Contractor shall ensure participation of his top most executive at site (viz. Resident Construction Manager / Resident Engineer / Project Manager / Site-in-Charge) in Safety Committee / HSE Committee meetings arranged by EIL/Owner usually on monthly basis or as and when called for. In case Contractor's top most executive at site is not in a position to attend such meeting, he shall inform EIL/Owner in writing before the commencement of such meeting indicating reasons of his absence and nominate his representative – failure to do so may invite very stringent penalization against the specific Contractor, as deemed fit in Contract. The obligation of compliance of any observations during the meeting shall be always time bound. The Contractor shall always assist EIL/Owner to achieve the targets set by them on HSE management during the project implementation.

- In addition, the Contractor shall also arrange internal HSE meetings chaired by his top most executive at site on weekly basis and maintain records. Such internal HSE meetings shall essentially be attended by field engineers / supervisors (& not by safety personnel only) of the Contractor and its associates. Records of such internal HSE meetings shall be maintained by the Contractor for review by EIL/Owner or for any HSE Audits.

- Agenda of internal HSE meeting should broadly cover: -

  a) Confirmation of record notes / minutes of previous meeting
  b) Discussion on outstanding subjects of previous points / subjects, if any
  c) Incidents / Accidents (of all types) at project site, if any
  d) Current topics related to site activities / subjects of discussion
  e) House keeping
  f) Behavioral Safety

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g) Information / views / deliberations of members / site sub Contractors
h) Report from Owner / Client
i) Status of Safety awareness, Induction programs & Training programs

The time frame for such HSE meeting shall be religiously maintained by one and all.

3.1.12 Intoxicating Drinks & Drugs and Smoking

- The Contractor shall ensure that his staff members & workers (permanent as well casual) shall not be in a state of intoxication during working hours and shall abide by any law relating to consumption & possession of intoxicating drinks or drugs in force.
- The Contractor shall not allow any workman to commence any work at any locations of project activity who is/are influenced / effected with the intake of alcohol, drugs or any other intoxicating items being consumed prior to start of work or working day.
- Awareness about local laws on this issue shall form part of the Induction Training and compulsory work-site discipline.
- The Contractor shall ensure that all personnel working for him comply with "No-Smoking" requirements of the Owner as notified from time to time. Cigarettes, lighters, auto ignition tools or appliances as well as intoxicating drugs, dry tobacco powder, etc. shall not be allowed inside the project / plant complex.
- Smoking shall be permitted only inside smoking booths exclusively designated & authorized by the Owner/EIL.

3.1.13 Penalty

The Contractor shall adhere consistently to all provisions of HSE requirements. In case of non-compliances and also for repeated failure in implementation of any of the HSE provisions, EIL/Owner may impose stoppage of work without any cost & time implication to the Owner and/or impose a suitable penalty.

The amount of penalty to be levied against defaulted Contractor shall be up to a cumulative limit of

2.0% (Two percent) of the contract value for Item Rate or Composite contracts with an overall ceiling of 1, 00, 00, 000 (Rupees One crore)

0.5% (Zero decimal five percent) of the contract value for LSTK, OBE, EPC, EPCC or Package contracts with an overall ceiling of 10, 00.00.000 (Rupees ten crores)

This penalty shall be in addition to all other penalties specified elsewhere in the contract. The decision of imposing stop-work-instruction and imposition of penalty shall rest with EIL/Owner. The same shall be binding on the Contractor. Imposition of penalty does not make the Contractor eligible to continue the work in unsafe manner.

The amount of penalty applicable for the Contractor on different types of HSE violations is specified below:

Sl. No.	Violation of HSE norms	Penalty Amount
1.	For not using personal protective equipment (Helmet, Shoes, Goggles, Gloves, Full body harness, Face shield, Boiler suit, etc.)	Rs 500/- per day/ Item / Person.
2.	Working without Work Permit/Clearance	Rs 20000/- per occasion

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3	Execution of work without deployment of requisite field engineer / supervisor at work spot	Rs. 5000/- per violation per day
4.	Unsafe electrical practices (not installing ELCB, using poor joints of cables, using naked wire without top plug into socket, laying wire/cables on the roads, electrical jobs by incompetent person, etc.)	Rs 10000/- per item per day.
5.	Working at height without full body harness, using non-standard/ rejected scaffolding and not arranging fall protection arrangement as required, like hand-rails, life-lines, Safety Nets etc.	Rs. 10000/- per case per day.
6.	Unsafe handling of compressed gas cylinders (No trolley, jubilee clips double gauge regulator, and not keeping cylinders vertical during storage/handling, not using safety cap of cylinder).	Rs 500/- per item per day.
7.	Use of domestic LPG for cutting purpose / not using flash back arresters on both the hoses/tubes on both ends.	Rs. 3000/- per occasion.
8.	No fencing/barricading of excavated areas / trenches.	Rs. 3000/- per occasion.
9.	Not providing shoring/strutting/proper slope and not keeping the excavated earth at least 1.5M away from excavated area.	Rs.5, 000/- per occasion.
10.	Non display of scaffold tags, caution boards, list of hospitals, emergency services available at work locations.	Rs.1000/- per occasion per day
11.	Traffic rules violations like over speeding of vehicles, rash driving, talking on mobile phones during vehicle driving, wrong parking, not using seat belts, vehicles not fitted with reverse horn / warning alarms / flicker lamps during foggy weather.	Rs. 2000/- per occasion per day
12.	Absence of Contractor's RCM/SIC or his nominated representative (prior approval must be taken for each meeting for nomination) from site HSE meetings whenever called by EIL/Owner & failure to nominate his immediate deputy (in the site-organogram) for such HSE meetings.	Rs10000/- per meeting.
13.	Failure to maintain HSE records by Contractor Safety personnel, in line with approved HSE Plan/Procedures/Contract specifications..	Rs 10000/- per month.
14.	Failure to conduct daily site safety inspection (by Contractor's safety engineers/safety officers), internal HSE meeting, internal HSE Awareness/Motivation Program, Site HSE Training and HSE audit at predefined frequencies (as approved in HSE Plan).	Rs.10000/- per occasion.
15.	Failure to submit the monthly HSE report by 5th of subsequent month to Project's Engineer-in-Charge / Owner	Rs. 10000/- per occasion and Rs. 1000/- per day of further delay.
16.	Poor House Keeping	Rs. 5000/- per occasion per subject

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17.	Failure to report & follow up accident (including Near Miss) reporting system within specific time-frame.	Rs. 20000/- per occasion
18.	Degradation of environment (not confining toxic spills, spilling oil/lubricants onto ground)	Rs10000/- per occasion
19.	Not medically examining the workers before allowing them to work at height / to work in confined space / to work in shot-blasting / to work for painting / to work in bitumen or asphalt works, not providing ear muffs while allowing them to work in noise polluted areas, made them to work in air polluted areas without respiratory protective devices, etc.	Rs 5000/- per occasion per worker
20.	Violation of any other safety condition as per job HSE plan / work permit and HSE conditions of contract (e.g. using crowbar on cable trenches, improper welding booth, not keeping fire extinguisher ready at hot work site, unsafe rigging practices, non-availability of First-Aid box at site, not using hood with respiratory devices by blaster for shot//grit blasting, etc.)	Rs. 5000/- per occasion
21.	Failure to carry-out Safety audit in time (internal & external), close-out of identified shortfalls of Observations of Safety Aspects(OSA),etc	Rs. 20,000/- per occasion
22.	Carrying out sand blasting instead of grit/shot blasting	Rs. 50,000/- per day
23.	Failure to deploy adequately qualified and competent Safety Officer	Rs. 10000/- per day per Officer
24.	Utilization of hydra/ back-hoe loader for material shifting or any other unauthorized /unsafe lifting works	Rs 25,000/- per occasion
25.	Any incident / accident at project site has been caused because of willful negligence or gross violation of safety measures / provisions on the part of the Contractor or any of its sub-agencies	Rs 10,00,000/-per occasion
26.	Any violation not covered above	To be decided by EIL/Owner.

- The Contractor shall make his field engineers/supervisors fully aware of the fact that they keep track with the site workmen for their behavior and compliance of various HSE requirements. Safety lapses / defects of project construction site shall be attributable to the concerned job supervisor / engineer of the Contractor, (who remains directly responsible for safely executing field works). For repeated HSE violations, concerned job supervisor / engineer shall be reprimanded or appropriate action, as deemed fit, shall be initiated (with an information to EIL & Owner) by the concerned Contractor.

Contractor shall initiate verbal warning shall be given to the worker/employee during his first HSE violation. A written warning shall be issued on second violation and specific training shall be arranged / provided by the Contractor to enhance HSE awareness/skill including feedback on the mistakes/ flaws. Any further violation of HSE stipulations by the erring individuals shall call for his forthright debar from the specific construction site. A record of warnings for each worker/employee shall be maintained by the Contractor, like by punching their cards / Gate passes or by displaying their names at the Project entry gate. Warnings, penalizations,

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appreciations etc. shall be discussed in HSE Committee meetings by site Head of the Contractor.

3.1.14 **Accident / Incident Investigation**

All accidents / incidents shall be informed to EIL/Owner at least telephonically by Contractor immediately and in writing within 24 hours on Format No. HSE-2 as applicable , by Contractor. Thereafter, a Supplementary Accident / Incident investigation Report on Format No. HSE-3 shall be submitted to EIL/Owner within 72 hours. Near Miss incident(s),Dangerous accidents/incident shall also be reported on Format No. HSE-4 within 24 hours. The accident/ incident shall be investigated by a team of Contractor's senior Site personnel (involving Site-in-Charge or at least by his deputy) for establishing root-cause and recommending corrective & preventive actions. Findings shall be documented and suitable actions taken to avoid recurrences shall be communicated to EIL/Owner. Owner/EIL shall have the liberty to independently investigate such occurrences and the Contractor shall extend all necessary help and cooperation in this regard. EIL/Owner shall have the right to share the content of this report with the outside world.

3.2 House Keeping

The Contractor shall ensure that a high degree of house keeping is maintained and shall ensure inter alia; the followings:

a) All surplus earth and debris are removed/disposed off from the working areas to designated location(s).
b) Unused/surplus cables, steel items and steel scrap lying scattered at different places within the working areas are removed to identify location(s).
c) All wooden scrap, empty wooden cable drums and other combustible packing materials, shall be removed from work place to identified location(s).
d) Roads shall be kept clear and materials like pipes, steel, sand, boulders, concrete, chips and bricks etc shall not be allowed on the roads to obstruct free movement of men & machineries.
e) Fabricated steel structural, pipes & piping materials shall be stacked properly for erection.
f) Water logging on roads shall not be allowed.
g) No parking of trucks/trolleys, cranes and trailers etc shall be allowed on roads, which may obstruct the traffic movement.
h) Utmost care shall be taken to ensure over all cleanliness and proper upkeep of the working areas.
i) Trucks carrying sand, earth and pulverized materials etc. shall be covered while moving within the plant area/ or these materials shall be transported with top surface wet.
j) The contractor shall ensure that the atmosphere in plant area and on roads is free from particulate matter like dust, sand, etc. by keeping the top surface wet for ease in breathing.
k) At least two exits for any unit area shall be assured at all times – same arrangement is preferable for digging pits / trench excavation / elevated work platforms / confined spaces etc.
l) Welding cables and the power cable must be segregated and properly stored and used .The same shall be laid away from the area of movement and shall be free from obstruction.
m) Schedule for upkeep/cleaning of site to be firmed up and implemented on regular basis

The Contractor shall carry-out regular checks (minimum one per fortnight) as per format No: HSE-11 for maintaining high standard of housekeeping and maintain records for the same.

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3.3 HSE Measures

3.3.1 Construction Hazards

The Contractor shall ensure identification of all Occupational Health, Safety & Environmental hazards in the type of work he is going to undertake and enlist mitigation measures. Contractor shall carry out Job Safety Analysis (JSA)/Risk Analysis specifically for high risk jobs/critical jobs like

a) Working at height (+2.0 Mts height) for cold (incl. colour washing, painting, insulation etc.) & hot works.
b) Work in confined space,
c) Deep excavations & trench cutting (depth > 2.0 mts.)
d) Operation & Maintenance of Batching Plant.
e) Shuttering / concreting (in single or multiple pour) for columns, parapets & roofs.
f) Erection & maintenance of Tower Crane.
g) Erection of structural steel members / roof-trusses / pipes at height more than 2.0 Mts. with or without crane.
h) Erection of pipes (full length or fabricated) at height more than 2.0 Mts. height with Crane of 100T capacity.
i) All lifts using 100T Crane plus mechanical pulling.
j) All lifts using two cranes in unison (Tandem Lifting).
k) Any lift exceeding 80% capacity of the lifting equipments (hydra, crane etc.).
l) Laying of pipes (isolated or fabricated) in deep narrow trenches – manually or mechanically.
m) Maintenance of crane / extension or reduction of crane-boom on roads or in yards.
n) Erection of any item at >2.0 Mts. height using 100T crane or of higher capacity
o) Hydrostatic test of pipes, vessels & columns and water-flushing.
p) Radiography jobs (in-plant & open field)
q) Work in Live Electrical installations / circuits
r) Handling of explosives & Blasting operations
s) Demolishing / dismantling activities
t) Welding / gas cutting jobs at height (+2.0 Mts.)
u) Lifting / placing roof-girders at height (+2.0 Mts.)
v) Lifting & laying of metallic / non-metallic sheet over roof/structures.
w) Lifting of pipes, gratings, equipments/vessels at heights (+2.0 Mts) with & without using cranes
x) Calibration of equipment, instruments and functional tests at yards / work-sites.
y) Operability test of Pump, Motors (after coupling) & Compressors.
z) Cold or Hot works inside Confined Space.
aa) Transportation & shifting of ODC consignments into project areas.
bb) Working in “charged/Live” elect. Panels
cc) Stress Relieving works (Electrically or by Gas-burners).
dd) Pneumatic Tests
ee) Card board blasting
ff) Chemical cleaning

and take feedback from EIL/Owner. The necessary HSE measures devised shall be put in to place, prior to start of an activity & also shall be maintained during the course of works, by the Contractor. Copies of such JSAs shall be kept available at work sites by the Contractor to enable all concerned carrying out checks / verification.

A list of typical construction hazards along with their effects & preventive measures is given in **Appendix-E.**

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3.3.2 **Accessibility**

- The Contractor shall provide safe means of access(in sufficient numbers) & efficient exit to any working place including provisions of suitable and sufficient scaffolding at various stages during all operations of the work for the safety of his workmen and EIL/Owner.

- The Contractor shall implement use of all measures including use of "life line", "fall-arresters", "retractable fall arresters" , "safety nets" etc. during the course of using all safe accesses & exits, so that in no case any individual remains at risk of slip & fall during their travel.

- The access to operating plant / project complex shall be strictly regulated. Any person or vehicle entering such complex shall undergo identification check, as per the procedures in force / requirement of EIL/Owner.

- Accessibility to 'confined space' shall be governed by specific system / regulation, as established at project site.

3.3.3 **Personal Protective Equipments (PPEs)**

- The Contractor shall ensure that all their staff, workers and visitors including their sub-contractor(s) have been issued (records to be kept) & wear appropriate PPEs like nape strap type safety helmets preferably with head & sweat band with ¾" cotton chin strap (made of industrial HDPE), safety shoes with steel toe cap and antiskid sole, full body harness (CE marked and conforming to EN361), protective goggles, gloves, ear muffs, respiratory protective devices, etc. All these gadgets shall conform to applicable IS Specifications/CE or other applicable international standards. The Contractor shall implement a regular regime of inspecting physical conditions of the PPEs being issued / used by the workmen of their own & also its sub-agencies and the damaged / unserviceable PPEs shall be replaced forthwith.

- Owner/EIL may issue a comprehensive color scheme for helmets to be used by various agencies. The Contractor shall follow the scheme issued by the owner/EIL and shall choose any colour other than white (for Owner) or blue (for EIL) All HSE personnel shall preferably wear dark green band on their helmet so that workmen can approach them for guidance during emergencies. HSE personnel shall preferably wear such dresses with fluorescent stripes, which are noticeable during night, when light falls on them.

- For shot blasting, the usage of protective face shield and helmets, gauntlet and protective clothing is mandatory. Such protective clothing should conform relevant IS Specification.

- For off-shore jobs/contracts, contractor shall provide PPEs (new) of all types to EIL & Owner's personnel, at his (contractor's) cost. All personnel shall wear life jacket at all time.

- An indicative list of HSE standards/codes is given under **Appendix-A**.

- Contractor shall ensure procurement & usage of following safety equipments/ accessories (conforming to applicable IS mark / CE standard) by their staff, workmen & visitors including their subcontractors all through the span of project construction / pre-commissioning/ Commissioning:-
  a. PPEs (Helmet, Spectacle, Ear-muff, Face shield, Hand gloves, Safety Shoes, Gum boot)
  b. Barricading tape / warning signs
  c. Rechargeable Safety torch (flame-proof)
  d. Safety nets (with tie-chords)
  e. Fall arresters

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f. Portable ladders (varying lengths)
g. Life-lines (steel wire-rope, dia not less than 8.0 mm)
h. Full body harness (double lanyard)
i. Lanyard
j. Karabiner
k. Retractable fall arresters (various length)
l. Portable fire extinguishers (DCP type) – 5 kg capacity
m. Portable Multi Gas detector
n. Sound level meter
o. Digital Lux meter
p. Fire hoses & flow nozzles
q. Fire blankets / Fire retardant cloth (with eyelets)

3.3.4 Working at Height

- The Contractor shall issue permit for working (PFW) at height after verifying and certifying the checkpoints as specified in the attached permit (Format No. HSE-6). He shall also undertake to ensure compliance to the conditions of the permit during the currency of the permit including adherence of personal protective equipments. Contractor's Safety Officer shall verify compliance status of the items of permit document after implementation of action is completed by Contractor's execution / field engineers at work site. Job Safety Analysis (JSA) for specific works at height duly commented by EIL/Owner, shall be kept attached with particular Permit for Work (PFW) at site for ready reference & follow-up.

- Such PFW shall be initially issued for one single shift or expected duration of normal work and extended further for balance duration, if required. EIL/Owner can devise block-permit system at any specific area, in consultation with project specific HSE Committee to specify the time-period of validity of such PFW or its renewal. This permit shall be applicable in areas where specific clearance from Owner's operation Deptt. /Safety Deptt. is not required. EIL / Owner's field Engineers/Safety Officers/Area Coordinators may verify and counter sign this permit (as an evidence of verification) during the execution of the job.

- All personnel shall be medically examined & certified by registered doctor, confirming their 'medical fitness for working at height. The fitness examination shall be done once in six months.

- In case work is undertaken without taking sufficient precautions as given in the permit, EIL /Owner Engineers may exercise their authority to cancel such permit and stop the work till satisfactory compliance/rectification is arranged made. Contractors are expected to maintain a register for issuance of permit and extensions thereof including preserving the used permits for verification during audits etc.

- The Contractor shall arrange (at his cost) and ensure use of Fall Arrester Systems by his workers. Fall arresters are to be used while climbing/descending tall structures or vessels / columns etc. These arresters should lock automatically against the anchorage line, restricting free fall of the user. The device is to be provided with a double security opening system to ensure safe attachment or release of the user at any point of rope. In order to avoid shock, the system should be capable of keeping the person in vertical position in case of a fall.

- The Contractor shall ensure that Full body harnesses conforming EN361 and having authorized CE marking is used by all personnel while working at height. The lanyards and

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life lines should have enough tensile strength to take the load of the worker in case of a fall. One end of the lanyard shall be firmly tied with the harnesses and the other end with life line. The harness should be capable of keeping the workman vertical in case of a fall, enabling him to rescue himself.

- The Contractor shall provide Roof Top Walk Ladders for carrying out activities on sloping roofs in order to reduce the chances of slippages and falls.
- The Contractor shall ensure that a proper Safety Net System is used wherever the hazard of fall from height is present. The safety net, preferably a knotted one with mesh ropes conforming to IS 5175/ ISO 1140 shall have a border rope & tie cord of minimum 12mm dia. The Safety Net shall be located not more than 6.0 meters below the working surface extending on either side up to sufficient margin to arrest fall of persons working at different heights.

- In case of accidental fall of person on such Safety Net, the bottom most portion of Safety Net should not touch any structure, object or ground.

- The Contractor shall ensure positive isolation while working at different levels like in the pipe rack areas. The working platforms with toe boards & hand rails shall be sufficiently strong & shall have sufficient space to hold the workmen and-tools & tackles including the equipments required for executing the job. Such working platforms shall have mid-rails, to enable people work safely in sitting posture.

3.3.5 Scaffoldings & Barricading

- Suitable scaffoldings shall be provided to workmen for all works that cannot be safely done from the ground or from solid construction except such short period work that can be safely done using ladders or certified (by 3rd party competent person) man-basket. When a ladder is used, an extra workman shall always be engaged for holding the ladder.

- The Contractor shall ensure that the scaffolds used during construction activities shall be strong enough to take the designed load. Main Contractor shall always furnish duly approved construction-design details of scaffold & SWL (from competent designers) free of charge, before they are being installed / constructed at site. Owner/EIL reserves the right to ask the Contractor to submit certification and or design calculations from his Head office / Design/ Engineering expert regarding load carrying capacity of the scaffoldings.

- All scaffolds shall be inspected by a competent Scaffolding Inspector of the Contractor. He shall paste a GREEN tag (duly signed by competent Scaffolding Inspector) on each scaffold found safe and a RED tag (duly signed by competent Scaffolding Inspector) on each scaffold found unsafe. Scaffolds with GREEN tag only shall be permitted to be used and Scaffolds with RED ones shall immediately be made inaccessible. Work being found continuing on scaffolds with RED tag shall be considered unauthorized work by Contractor and may invite penalization from EIL/Owner. For every 120-125 m^2 /m^3 area / volume or its parts thereof minimum one TAG shall be provided.

- The Contractor shall ensure positive barricading (indicative as well as protective) of the excavated, radiography, heavy lift, high pressure hydrostatic & pneumatic testing and other such areas. Sufficient warning signs shall be displayed along the barricading areas.

- Scaffolding shall be constructed using foot seals or base plates only.

3.3.6 Electrical Installations

- All electrical installations/ connections shall be carried out as per the provisions of latest revision of following codes/standards, in addition to the requirements of Statutory

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Authorities and IE/applicable international rules & regulations:

- OISD STD 173: Fire prevention & protection system for electrical installations
- SP 30 (BIS) : National Electric Code

- All electrical installations shall be approved by the concerned statutory authorities.

- All temporary electrical installations / facilities shall be regularly checked by the licensed/competent electricians of the Contractor and appropriate records shall be maintained in format no: HSE-12" Inspection of temporary electrical booth/installation at project construction site". Such inspection records are to be made available to EIL/Owner, whenever asked for.

3.3.6.1 The Contractor shall meet the following requirements:

a. Shall make Single Line Diagram (SLD) for providing connection to each equipments & machinery and the same (duly approved by EIL/Owner) shall be pasted on the front face of DBs (distribution boards) or JBs (Junction boxes) at every site. (A typical Switch Board Sketch is attached as Appendix -G)

b. Ensure that electrical systems and equipment including tools & tackles used during construction phase are properly selected, installed, used and maintained as per provisions of the latest revision of the Indian Electrical/ applicable international regulations.

c. Shall deploy qualified & licensed electricians for proper & safe installation and for regular inspection of construction power distribution system/points including their earthing. A copy of the license shall be submitted to EIL / Owner for records. Availability of at least one competent (ITI qualified) / licensed electrician (by State Elec. authorities) shall be ensured at site round the clock to attend to the normal/emergency jobs.

d. All switchboards / welding machines shall be kept in well-ventilated & covered shed/ with rain shed protection. The shed shall be elevated from the existing ground level to avoid water logging inside the shed . Installation of electrical switch board must be done taking care of the prevention of shock and safety of machine.

e. No flammable materials shall be used for constructing the shed. Also flammable materials shall not be stored in and around electrical equipment / switchboard. Adequate clearances and operational space shall be provided around the equipment.

f. Fire extinguishers and insulating mats shall be provided in all power distribution centers.

g. Temporary electrical equipment shall not be employed in hazardous area without obtaining safety permit.

h. Proper housekeeping shall be done around the electrical installations.

i. All temporary installations shall be tested before energizing, to ensure proper earthing, bonding, suitability of protection system, adequacy of feeders/cables etc.

j. All welders shall use hand gloves irrespective of holder voltage.

k. Multilingual (Hindi, English and local language) caution boards, shock treatment charts and instruction plate containing location of isolation point for incoming supply, name & telephone No. of contact person in emergency shall be provided in substations and near all distribution boards / local panels.

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l. Operation of earth leakage device shall be checked regularly by temporarily connecting series test lamp (2 bulbs of equal rating connected in series) between phase and earth. ELCB tester /test meter shall be used for testing ELCBs

m. Regular inspection of all installations at least once in a month. (Ref. **Format HSE-12**).

3.3.6.2 The following features shall also be ensured for all electrical installations during construction phase by the contractor:

- Each installation shall have a main switch with a protective device, installed in an enclosure adjacent to the metering point. The operating height of the main switch shall not exceed 1.5 M. The main switch shall be connected to the point of supply by means of armoured cable.

- The outgoing feeders shall be double or triple pole switches with fuses / MCBs. Loads in a three phase circuit shall be balanced as far as possible and load on neutral should not exceed 20% of load in the phase.

- The installation shall be adequately protected against overload, short circuit and earth leakage by the use of suitable protective devices. Fuses wherever used shall be HRC type. Use of rewirable fuses shall be strictly prohibited. The earth leakage device shall have an operating current not exceeding 30 mA.

- All connections to the hand tools / welding receptacles shall be taken through proper switches, sockets and plugs.

- All single phase sockets shall be minimum 3 pin type only. All unused sockets shall be provided with socket caps.

- Only 3 core (P+N+E) overall sheathed flexible cables with minimum conductor size of 1.5 mm^2 copper shall be used for all single phase hand tools.

- Only metallic distribution boxes with double earthing shall be used at site. No wooden boxes shall be used.

- All power cables shall be terminated with compression type cable glands. Tinned copper lugs shall be used for multi-strand wires / cables.

- Cables shall be free from any insulation damage.

- Minimum depth of cable trench shall be 750 mm for MV & control cables and 900 mm for HV cables. These cables shall be laid over a sand layer and covered with sand, brick & soil for ensuring mechanical protection. Cables shall not be laid in waterlogged area as far as practicable. Cable route markers shall be provided at every 25 M of buried trench route. When laid above ground, cables shall be properly cleated or supported on rigid poles of at least 2.1 M high. Minimum head clearance of 6 meters shall be provided at road crossings.

- Under ground road crossings for cables shall be avoided to the extent feasible. In any case no under ground power cable shall be allowed to cross the roads without pipe sleeve.

- All cable joints shall be done with proper jointing kit. No taped/ temporary joints shall be used.

- An independent earthing facility should preferably be established within the temporary installation premises. All appliances and equipment shall be adequately earthed. In case of armoured cables, the armour shall be bonded to the earthing system.

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- All cables and wire rope used for earth connections shall be terminated through tinned copper lugs.

- In case of local earthing, earth electrodes shall be buried near the supply point and earth continuity wire shall be connected to local earth plate for further distribution to various appliances. All insulated wires for earth connection shall have insulation of green colour.

- Separate core shall be provided for neutral. Earth / Structures shall not be used as a neutral in any case.

- ON/OFF position of all switches shall be clearly designated / painted for easy isolation in emergency.

3.3.7 Welding / Gas Cutting

- Contractor shall ensure that flash back arrestors conforming to BS: 6158 or equivalent are installed on all gas cylinders as well as at the torch end of the gas hose, while in use.
- All cylinders shall be mounted on trolleys and provided with a closing key. Empty & filled-up gas cylinders shall be stored separately with TAG, protecting them from direct sun or rain. Minimum 2 nos. of Portable DCP type fire extinguishers (10 kg) shall be maintained at the gas cylinder stores. Stacking & storing of compressed gas cylinders shall be arranged away from DG set, hot works, Elect. Panels / Elec. boards, etc
- The burner and the hose placed downstream of pressure reducer shall be equipped with Flash Back Arrester/Non Return Valve device.
- The hoses for acetylene and oxygen cylinders must be of different colours. Their connections to cylinders and burners shall be made with a safety collar.
- At end of work, the cylinders in use shall be closed and hoses depressurized.
- Cutting of metals using gases, other than oxygen & acetylene, shall require written concurrence from Owner.
- All welding machines shall have effective earthing at least at distinctly isolated two points.
- In order to help maintain good housekeeping, and to reduce fire hazard, live electrode bits shall be contained safely and shall not be thrown directly on the ground.
- The hoses of Acetylene and Oxygen shall be kept free from entanglement & away from common pathways / walkways and preferably be hanged overhead in such a manner which can avoid contact with cranes, hydra or other mobile construction machinery.
- Hot spatters shall be contained / restricted appropriately (by making use of effective fire-retardant cloth/fabric) and their flying-off as well as chance of contact with near-by flammable materials shall be stopped.
- The Contractor shall arrange adequate systems & practices for accumulation / collection of metal & other scraps and remnant electrodes and their safe disposal at regular interval so as to maintain the fabrication and other areas satisfactorily clean & tidy.
- All gas cylinders must have a cylinder cap on at all times when not in use.

3.3.8 Ergonomics and Tools & Tackles

- The Contractor shall assign to his workmen, tasks commensurate with their qualification, experience and state of health.
- All lifting tools, tackles, equipment, accessories including cranes shall be tested periodically by statutory/competent authority for their condition and load carrying capacity. Valid test & fitness certificates from the applicable authority shall be submitted to Owner/EIL for their review/acceptance before the lifting tools, tackles, equipment, accessories and cranes are used.

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- The contractor shall not be allowed to use defective equipment or tools not adhering to safety norms.
- Contractor shall arrange non-sparking tools for project construction works in operating plant areas / hydrocarbon prone areas.
- Wherever required the Contractor shall make use of Elevated Work Platforms (EWP) or Aerial Work Platforms (mobile or stationary) to avoid ergonomical risks and workmen shall be debarred to board such elevated platform during the course of their shifting / transportation.
- Contractor shall ensure installation of Safe Load Indicator (SLI) on all cranes (while in use) to minimize overloading risk. SLI shall have capability to continuously monitor and display the load on the hook, and automatically compare it with the rated crane capacity at the operating condition of the crane. The system shall also provide visual and audible warnings at set capacity levels to alert the operator in case of violations.
- The contractor shall be responsible for safe operations of different equipments mobilized and used by him at the workplace like transport vehicles, engines, cranes, mobile ladders, scaffoldings, work tools, etc.
- The Contractor shall arrange periodical training for the operators of hydra, crane, excavator, mobile machinery, etc. at site by utilizing services from renowned manufacturers

3.3.9 Occupational Health

- The contractor shall identify all operations that can adversely affect the health of its workers and issue & implement mitigation measures.
- For surface cleaning operations, sand blasting shall not be permitted even if not explicitly stated elsewhere in the contract.
- To eliminate radiation hazard, Tungsten electrodes used for Gas Tungsten Arc Welding shall not contain Thorium.
- Appropriate respiratory protective devices(hood with respiratory devices) shall be used to protect workmen from inhalation of air borne contaminants like silica, asbestos, gases, fumes, etc.
- Workmen shall be made aware of correct methods for lifting, carrying, pushing & pulling of heavy loads. Wherever possible, manual handling shall be replaced by mechanical lifting equipments.
- For jobs like drilling/demolishing/dismantling where noise pollution exceeds the specified limit of 85 decibels, ear muffs shall be provided to the workers.
- To avoid work related upper limb disorders (WRULD) and backaches, Display Screen Equipments' workplace stations shall be carefully designed & used with proper sitting postures. Power driven hand-held tools shall be maintained in good working condition to minimize their vibrating effects and personnel using these tools shall be taught how to operate them safely & how to maintain good blood circulation in hands.
- The Contractor shall arrange health check up (by registered medical practitioner) for all the workers at the time of induction. Health check may have to be repeated if the nature of duty assigned to him is changed necessitating health check or doubt arises about his wellness. EIL/Owner reserves the right to ask the contractor to submit medical test reports. Regular health check-ups are mandatory for the workers assigned with Welding, Radiography, Blasting, Painting, Heavy Lift and Height (>2m) jobs. All the health check-ups shall be

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conducted by registered Medical practitioner and records are to be maintained by the Contractor.

- The Contractor shall ensure vaccination of all the workers including their families, during the course of entire project span.

3.3.10 **Hazardous Substances**

- Hazardous, inflammable and/or toxic materials such as solvent coating, thinners, anti-termite solutions, water proofing materials shall be stored in appropriate containers preferably with lids having spillage catchment trays and shall be stored in a good ventilated area. These containers shall be labeled with the name of the materials highlighting the hazards associated with its use and necessary precautions to be taken. Respective MSDS (Material Safety Data Sheet) shall be made available at site & may be referred whenever problem arises.

- Where contact or exposure of hazardous materials are likely to exceed the specified limit or otherwise have harmful effects, appropriate personal protective equipments such as gloves, goggles/face-shields, aprons, chemical resistant clothing, respirator, etc. shall be used.

- The work place shall be checked prior to start of activities to identify the location, type and condition of any asbestos materials which could be disturbed during the work. In case asbestos material is detected, usage of appropriate PPEs by all personnel shall be ensured and the matter shall be reported immediately to EIL/ Owner.

3.3.11 **Slips, Trips & Falls**

The contractor shall establish a regular cleaning and basic housekeeping programme that covers all aspects of the workplace to help minimize the risk of slips, trips & falls. The contractor shall take positive measures like keeping the work area tidy, storing waste in suitable containers & harmful items separately, keeping passages, stairways, entrances & exits especially emergency ones clear, cleaning up spillages immediately and replacing damaged carpet/ floor tiles, mats & rugs at once to avoid slips, trips & falls.

3.3.12 **Radiation Exposure**

- All personnel exposed to physical agents such as ionizing & non-ionizing radiation, including ultraviolet rays or similar other physical agents shall be provided with adequate shielding or protection commensurate with the type of exposure involved.

- For Open Field Radiography works , requirements of Bhabha Atomic Research Centre (BARC)/ Atomic Energy Regulatory Board (AERB) shall be followed.

- The Contractor shall implement an effective system of control (as described in the AERB regulations) at site for handling radiography-sources & for avoiding its misuse & theft.

- The contractor shall generate the Format No: HSE-8 “Permit for radiation work” before start of work.

- In case the radiography work has to be carried out at day time, suitable methodology to be used so that other works, people are not affected.

3.3.13 **Explosives / Blasting Operations**

- Blasting operations shall be carried out as per latest Explosive Rules (Indian / International) with prior permission. The Contractor shall obtain license from Chief Controller of

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Explosives (CCoE) for collection, transportation, storage of explosives as well as for carrying out blasting operations.

- The Contractor shall prepare exclusive method statement (in cognizance with statutory requirements) for diffusing unfired explosives, if any, at project site before carrying out actual task. Nowhere blasting shall be carried out by the Contractor or its agency without the involvement of competent supervisor and licensed blaster / shot blaster.

3.3.14 **Demolition / Dismantling**

- The contractor shall adhere to safe demolishing/ dismantling practices at all stages of work to guard against unsafe working practices.
- The contractor shall disconnect service lines (power, gas supply, water, etc.)/ make alternate arrangements prior to start of work and restore them, if required as directed by EIL/ Owner at no extra cost.
- Before carrying out any demolition/ dismantling work, the contractor shall take prior approval of EIL/Owner and generate the Format No.HSE-9. For revamp jobs in operating plants where location of underground utilities is not known with certainty, the contractor shall depute an experienced engineer for supervision and shall make adequate arrangements for Fire fighting & First-Aid during the execution of these activities.
- The Contractor shall arrange approved Job Safety Analysis (JSA) / Method Statement for the specific demolition / dismantling task and corresponding action plan commensurate with hazards / risks associated therein. In no case any activity related to demolition / dismantling shall be carried out by the Contractor without engaging own supervision / field engineer.

3.3.15 **Road Safety**

- The Contractor shall ensure adequately planned road transport safety management system.

- The vehicles shall be fitted with reverse warning alarms & flashing lights / fog-lights and usage of seat belts shall be ensured.

- The Contractor shall also ensure a separate pedestrian route for safety of the workers and comply with all traffic rules & regulations, including maintaining speed limit of 20 kmph or indicated by owner for all types of vehicles / mobile machinery. The maximum allowable speed shall be adhered to.

- In case of an alert or emergency, the Contractor must arrange clearance of all the routes, roads, access. The Contractor shall deploy sufficient number of traffic controllers at project site routes / roads/ accesses, to alert reversing movement of vehicles & machinery as well as pedestrians.

- Dumpers, Tippers, etc. shall not be allowed to carry workers within the plant area and also to & from the labour colony to & from project sites.

- Hydras shall only be allowed for handling the materials at fabrication/ storage yards and in no case shall be allowed to transport the materials over project / plant roads.

- The Contractor shall not deploy any such mobile machinery / equipments, which do not have competent operator and / or experienced banks-man / signal-man. Such machinery / equipments shall have effective limit-switches, reverse-alarm, front & rear-end lights etc. and shall be maintained in good working order.

- The Contractor shall not carry-out maintenance of vehicles / mobile machinery occupying space on project / plant roads and shall always arrange close supervision for such works.

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- For pipeline jobs, the contractor shall submit a comprehensive plan covering transportation, loading / unloading of pipes, movement of side booms, movement of vehicles on the ROW, etc.

- Contractor's shall arrange /install visible road signs, diversion boards, caution boards, etc on project roads for safe movement of men and machinery.

3.3.16 Welfare Measures

Contractor shall, at the minimum, ensure the following facilities at work sites:

- A crèche at site where 10 or more female workers are having children below the age of 6 years.
- Adequately ventilated / illuminated rooms at labour camps & its hygienic up-keeping.
- Reasonable canteen facilities at site and in labour camps at appropriate location depending upon site conditions. Contractor shall make use of "industrial" variety of LPG cylinder & satisfactory illumination at the canteens. Necessary arrangement for efficient disposal of wastes from canteens & urinals /toilets shall also be made and regular review shall be made to maintain the ambience satisfactorily hygienic & shall also comply with all applicable statutory requirements.
- Adequately lighted & ventilated Rest rooms at site (separate for male workers and female workers).
- Urinals, Toilets, drinking water, washing facilities, adequate lighting at site and labour camps, commensurate with applicable Laws / Legislation.

3.3.17 Environment Protection

Contractor shall ensure proper storage and utilization methodology of materials that are detrimental to the environment. Where required, Contractor shall ensure that only the environment friendly materials are selected and emphasize on recycling of waste materials, such as metals, plastics, glass, paper, oil & solvents. The waste that can not be minimized, reused or recovered shall be stored and disposed of safely. In no way, toxic spills shall be allowed to percolate into the ground. The contractor shall not use the empty areas for dumping the wastes.

The contractor shall strive to conserve energy and water wherever feasible.

The contractor shall ensure dust free environment at workplace by sprinkling water on the ground at frequent intervals. The air quality parameters for dust, poisonous gases, toxic releases, harmful radiations, etc. shall be checked by the contractor on daily basis and whenever need arises.

The contractor shall not be allowed to discharge chemicals, oil, silt, sewage, sullage and other waste materials directly into the controlled waters like surface drains, streams, rivers, ponds. A discharge plan suggesting the methods of treating the waste before discharging shall be submitted to EIL/Owner for approval.

For pipeline jobs, top soil shall be stacked separately while making ROW through fields. This fertile soil shall be placed back on top after backfilling.

For offshore construction barges, arrangements shall be made for safe disposal of human, food & other wastes and applicable laws in this regard shall be followed.

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3.3.18 **Rules & Regulations**

All persons deployed at site shall be knowledgeable of and comply with the environmental laws, rules & regulations relating to the hazardous materials, substances and wastes. Contractor shall not dump, release or otherwise discharge or disposes off any such materials without the express authorization of EIL/Owner. An indicative list of Statutory Acts & Rules relating to HSE is given under Appendix-D.

3.3.19 **Weather Protection**

Contractor shall take appropriate measures to protect workers from severe storms, rain, solar radiations, poisonous gases, dust, etc. by ensuring proper usage of PPEs like Sun glasses, Sun screen lotions, respirators, dust masks, etc. and rearranging/ planning the construction activities to suit the weather conditions. Effective arrangement (without creating inconvenience to project facilities & permanent installations) for protecting workmen from hailstorm, drizzle in the form of temporary shelter shall be made at site.

3.3.20 **Communication**

All persons deployed at the work site shall have access to effective means of communication so that any untoward incident can be reported immediately and assistance sought by them.

All health & safety information shall be communicated in a simple & clear language easily understood by the local workforce.

For information to all, typical subjects that should be communicated are: -

Inside the company (Top to down)

a. Quality Policy
b. HSE Policy contents
c. Environment Policy
d. HSE Objectives
e. Safety Cardinal Rules
f. HSE Target – reached or missed
g. Praises & Warnings to personnel for HSE Management
h. Safety Walk Through Reports and safety defects / shortfalls (by management)
i. HSE Audit results
j. Revised Statutory Health & Safety provisions, if any
k. H & S publicity
l. Suggestions

Inside the Company (Bottom to up)

a. Complaints
b. Compliances on safety defects / shortfalls
c. Suggestions
d. Proposals for changes & improvements
e. HSE Reports (including near-miss reports)

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3.3.21 Confined Space Entry

The contractor shall generate a work permit (Format No. HSE -7) before entering a confined space. People, who are permitted to enter into confined space, must be medically examined & certified by registered doctor, confirming their 'medical fitness for working in confined space'. All necessary precautions mentioned therein shall be adhered to. An attendant shall be positioned outside a confined space for extending help during an emergency. All appropriate PPEs and air quality parameters shall be checked before entering a confined space. It shall be ensured that the piping of the equipment which has to be opened is pressure- free by checking that blinds are in place, vents are open and volume is drained. Inside confined space works, only electrical facilities / installations of 24V shall be permitted. Contactor shall ensure usage of safe & suitable arrangement of oxygen supply for individual workmen (during the course of work in confined space), if oxygen concentration is found to be less than 19.5% (v/v) there.

3.3.22 Heavy Lifts

- The contractor shall submit detailed rigging studies plan for EIL/ Owner approval prior to lifting equipment which cannot be erected with a crane of approx. 100 MT capacity due to constraints of its dimensions, location of foundation height, approach & weight.

- Contractor shall generate the format no:HSE-15 "Permit for heavy lift/critical erection"

- Prior to actual lifting activities, contractor shall check the validity of the crane inspection certificate issued by statutory/ competent authority. This requirement shall also apply to all rigging equipments utilized for the job.

- The contractor shall, at all times, be responsible for all rigging activities.

- The Contractor shall ensure medical fitness of all workmen who are engaged / involved in erection of equipments, vessels etc. and such fitness checks shall be carried-out every six months interval with the help of a registered medical practitioner & record shall be maintained

- Adequate safety measures such as positive barricading, usage of appropriate PPEs, permit to work, etc. shall be taken during all heavy or critical lifts.

- For lifting any material (irrespective of shape, size or volume), at any height, it is always advisable to prepare a Plan of Erection (PoE) taking into consideration hazards & risks associated therein – this can enable people to put their own experiences of various natures & side-by-side establish a practical method for risk-free erection / lifts. The contractor shall prepare PoE & shall document the same, when risks are identified as "medium" or "high" and the same shall be approved by its competent / qualified engineer.

3.3.23 Key Performance Indicators

The contractor shall measure an activity in both leading & trailing indicators for statistical and performance measurement. The activities pertaining to key performance indicators are covered in Monthly HSE Report (Format No. HSE-5). The contractor shall try to achieve a statistically fair record and strive for its continual improvement.

Leading Indicators viz:-:

- Number of Safety Inductions carried-out at site (for workmen & staff members)
- Number of HSE inspections carried out
- Number of "Safety Walk Through" carried-out by site-head.

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- Number of HSE shortfalls / lapses identified per contractor & closed-out in time.
- Number of Safety Meetings conducted (in-house / with contractors)
- Number of HSE Audits made (internal & external) vis-à-vis non conformances raised
- Number of HSE Awareness / Motivational program conducted by contractors
- Number of HSE Trainings conducted at site for supervisors & workmen
- Study of Near miss case reported
- Encouragements / Awards / Recognitions to workmen, job supervisors & field engineers.
- Suggestions for improvement

Trailing Indicators viz:-:

- Calculation of HSE statistics viz frequency rate, severity rate, LTA free manhours, etc.
- Analysis of incidents / accidents (nature, severity, types etc.)
- Study of Incident / Accident with respect to :-

  - Variety
  - Period of the year / project span
  - Timings of the incident / accident
  - Age profile of victims
  - Body parts involved
  - Penalty levied for causing incident / accident

3.3.24 **Unsuitable Land Conditions**

Contractor shall take appropriate measures and necessary work permits/clearances if work is to be done in or around marshy areas, river crossings, mountains, monuments, etc. The Contractor shall make right assessment and take all necessary action for developing work areas to make them safe & suitable for crane operations or other vehicular movement before carrying out any project related activity / operation. Contractor shall take all necessary actions to make the surroundings of its site establishments (site office, stores, lay-down area etc.) work-worthy safe and secure.

3.3.25 **Under Water Inspection**

Contractor shall ensure that boats and other means used for transportation, surveying & investigation works shall be certified seaworthy by a recognized classification society. It shall be equipped with all life saving devices like life jackets, adequate fire protection arrangements and shall posses communication facilities like cellular phones, wireless, walkie-talkie. All divers used for seabed surveys, underwater inspections shall have required authorized license, suitable life saving kit. Number of hours of work by divers shall be limited as per regulations. EIL/ Owner shall have the right to inspect the boat and scrutinize documents in this regard.

3.3.26 **Excavation**

The Contractor shall obtain permission from competent authorities prior to excavation wherever required.

The Contractor shall locate the position of buried utilities (water line, cable route, etc.) by referring to project / plant drawing / in consultation with EIL/Owner. The Contractor shall start digging manually to locate the exact position of buried utilities & thereafter use mechanical means.

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The Contractor shall keep soil heaps at least 1.5 M away from edge or a distance equal to depth of pit (whichever is more)

The Contractor shall maintain sufficient "angle of repose" during excavation – shall also provide slope or suitable bench as decided by EIL / Owner.

The Contractor shall arrange "battering" or "benching" wherever required for preventing collapse of edge of excavations.

The Contractor shall identify & arrange de-watering pump or well-point system to prevent earth collapse due to heavy rain / influx of underground water.

The Contractor shall arrange protective fencing / barricading with warning signal around excavated pits, trenches, etc. along with minimum 2 (two) entries, exits / escape ladders.

The Contractor must avoid "underpinning" / under-cutting to prevent collapse of chunk of earth during excavation

The Contractor shall use "stoppers" to prevent over-run of vehicle wheels at the edge of excavated pits / trenches.

The Contractor shall arrange strengthening of "shoring" & "strutting" proactively to avoid collapse of earth / edges due to vehicular movement in close proximity of excavated areas / pits/ trenches, etc.

3.4 Tool Box Talks (TBT)

Contractor shall conduct daily TBT with workers prior to start of work and shall maintain proper record of the meeting. A suggested format is given below. The TBT is to be conducted by the immediate supervisor of the workers
The Contractor shall conduct TBT before start of every morning or evening shift or night shift activities, for alerting the workers on specific hazards and their appropriate dos & don'ts. The Contractor shall provide sufficient rests to the site workmen and their foremen to avert fatigue & thereby endangering their lives during the course of site works.

TOOL BOX TALK RECORDING SHEET

Date & Time		
Work Location		
Subject (Nature of work)		
Presenter		
Hazards involved		
Precautions to be taken		
Worker's Name	Signature	Section
Remarks, in any		

The topics during TBT shall include

- Hazards related to work assigned on that day and precautions to be taken.
- Any forthcoming HSE hazards/events/instruction/orders, etc.

The above record can be kept in local language, which workers can read. These records shall be made available to EIL/ Owner whenever demanded.

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3.5 Training & Induction Programme

- Initial induction of workers into Construction oriented activities and appraising them about the methodology of works and how to carry-out safely and the same should not be inter mixed with Tool Box Talks or HSE Training. In this regard careful action should be made & maintained for imparting HSE induction to every individual, irrespective of his task/designation/level of employment, whereas, HSE Training should be imparted to specific person/group of people who are to carry-out that specific task more than once – for example, Riggers must be trained for working at heights, welders must be trained for work in confined space, fitters/carpenters, mesons must be trained for work at heights, etc.

- Contractor shall conduct Safety induction programme on HSE for all his workers and maintain records. The Gate Pass shall be issued only to those workers who successfully qualify the Safety induction programme.

- The Contractor shall brief the visitors about the HSE precautions which are required to be taken before their proceeding to site and make necessary arrangements to issue appropriate PPEs like Aprons, hard hats, ear-plugs, goggles & safety shoes etc., to his visitors. The Contractor shall always maintain relevant acknowledgement from visitor on providing him brief information on HSE actions.

- Contractor shall ensure that all his personnel possess appropriate training to carry out the assigned job safely. The training should be imparted in a language understood by them and should specifically be trained about

- Potential hazards to which they may be exposed at their workplace
- Measures available for prevention and elimination of these hazards

The topics during training shall cover, at the minimum: -

- Why safety should be considered during work - explanation
- Education about hazards and precautions required
- Employees' duties & responsibilities
- Emergency and evacuation plan
- HSE requirements during project activities
- Fire fighting and First-Aid
- Use of PPEs
- Occupational health issues – dos & don'ts
- Local laws on intoxicating drinks, drugs, smoking in force
- Common environmental subjects – lighting, ventilation, vibration, smoke/fumes etc.

- Records of the training shall be kept and submitted to EIL/ Owner.

- The Contractor shall make regular program for conducting Safety Training on various topics related to various activities & their safe-guarding utilizing experienced persons / outside agency / faculty. A program for Safety Training (indicative list as per Appendix –F) shall be furnished by the Contractor in its HSE Plan.

- For offshore and jetty jobs, contractor shall ensure that all personnel deployed have undergone a structured sea survival training including use of lifeboats, basket landing, use of radio communication etc. from an agency acceptable to Owner/EIL.

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3.6 Additional Safety Requirements for Working Inside a Running Plant

As a minimum, the contractor shall ensure adherence to following safety requirements while working in or in the close vicinity of an operating plant:

a) Contractor shall obtain permits for Hot work, Cold work, Excavation and Confined Space from Owner in the prescribed format.

b) The contractor shall monitor record and compile list of his workers entering the operational plant/unit each day and ensure & record their return after completing the job.

c) Contractor's workers and staff members shall use designated entrances and proceed by designated routes to work areas only assigned to them. The workers shall not be allowed to enter units' area, tanks area, pump rooms, etc. without work authorization permit.

d) Work activities shall be planned in such a way so as to minimize the disruption of other activities being carried out in an operational plant/unit and activities of other contractors.

e) The contractor shall submit a list of all chemicals/toxic substances that are intended to be used at site and shall take prior approval of the Owner.

f) Specific training on working in a hydrocarbon plant shall be imparted to the work force and mock drills shall be carried out for Rescue operations/First-Aid measures.

g) Proper barricading/cordoning of the operational units/plants shall be done before starting the construction activities. No unauthorized person shall be allowed to trespass. The height and overall design of the barricading structure shall be finalized in consultation with the Owner and shall be got approved from the Owner.

h) Care shall be taken to prevent hitting underground facilities such as electrical cables, hydrocarbon piping during execution of work.

i) Barricading with water curtain shall be arranged in specific/critical areas where hydrocarbon vapors are likely to be present such as near horton spheres or tanks. Positioning of fire tenders (from owner) shall also be ensured during execution of critical activities.

j) Emergency evacuation plan shall be worked out and all workmen shall be apprised about evacuation routes. Mock drill operations may also be conducted.

k) Flammable gas test shall be conducted prior to any hot work using appropriate measuring instruments. Sewers, drains, vents or any other gas escaping points shall be covered with flame retardant tarpaulin.

l) Respiratory devices shall be kept handy while working in confined zones where there is a danger of inhalation of poisonous gases. Constant monitoring of presence of Gas/ Hydrocarbon shall be done.

m) Clearance shall be obtained from all parties before starting hot tapping, patchwork on live lines and work on corroded tank roof.

n) Positive isolation of line/equipment by blinding for welding/cutting/grinding shall be done. Closing of valve will not be considered sufficient for isolation.

o) Welding spatters shall be contained properly and in no case shall be allowed to fall on the ground containing oil. Similar care shall be taken during cutting operations.

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p) The vehicles, cranes, engines, etc. shall be fitted with spark arresters on the exhaust pipe and got it approved from Safety Department of the Owner.

q) Plant air should not be used to clean any part of the body or clothing or use to blow off dirt on the floor.

r) Gas detectors should be installed in gas leakage prone areas as per requirement of Owner's plant operation personnel.

s) Experienced full time safety personnel shall be exclusively deployed to monitor safety aspects in running plants.

3.7 Self Assessment and Enhancement

The contractor shall develop a method of check & balance through self assessment & enhancement techniques and shall explore the opportunities for continual improvement in the HSE system.

3.8 HSE Promotion

The contractor shall encourage his workforce to promote HSE efforts at workplace by way of organizing workshops/seminars/training programmes, celebrating HSE awareness weeks & National Safety Day, conducting quizzes & essay competitions, distributing pamphlets, posters & material on HSE, providing incentives for maintaining good HSE practices and granting incentives / bonus for completing the job without any lost time accident.

3.9 Lock Out and Tag Out (LOTO) for Isolation of Energy Source

- Contractor shall follow the LOTO/Isolation procedure of owner for all energy source isolations installed/under purview by /of owner ie. “Brown field”
- For all the other energy source (not under purview of client/owner) i.e “Green field” Contractor shall develop a system to ensure the isolation of equipments, pipelines, Vessel, electrical panels from the energy source covering following as minimum:-
  - Identification of all energy source viz electrical, mechanical, hydraulic, pneumatic, chemical, thermal, gravitational, radiation and other forms of stored or kinetic energy.
  - Establishing the energy isolation devices viz: manually operated electrical circuit breakers, disconnection switches, blind flanges, etc.
  - Installation of Lock Out devices for preventing the inadvertent release of stored energy and Tag Out devices (“Danger”, “Do Not operate” or Do not Remove” tags) to indicate that testing, maintenance or servicing is underway and the device cannot be operated until the tag out device is removed.
  - Lock Out and Tag out log book
  - Permit for isolation and de-isolation of energy source as per format NO: HSE-16
  - Availability of competent persons like experienced operators at substations, pump house, units, etc, ; supervisors, etc.
- Contractor shall ensure that all the sources are locked out and tagged properly before giving clearance to start the job.
- After the completion of job, contractor shall ensure all tools and tackles are removed and nobody is present in the working area and signing on LOTO log book.
- Only on confirmation of above the contractor will remove their lock and tag from the isolation points and give instructions for energizing the same. Only the person carrying out the task shall himself carry the key for the lock in /Lock out.

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4.0 DETAILS OF HSE MANAGEMENT SYSTEM BY CONTRACTOR

4.1 On Award of Contract

The Contractor shall submit a comprehensive Health, Safety and Environment Plan or programme for approval by EIL/Owner prior to start of work. The Contractor shall participate in the pre-start meeting with EIL/Owner to finalize HSE Plans which shall including the following:

- HSE policy & Objectives
- Job procedure to be followed by the Contractor for construction activities including handling of equipments, scaffolding, electric installations, etc. describing the risks involved, actions to be taken and methodology for monitoring each activity. Indicative list of procedures is enclosed as Annexure-H
- EIL/Owner review/audit requirement.
- Organization structure along with responsibility and authority, on HSE activities.
- Administrative & disciplinary steps involving implementation of HSE requirements
- Emergency evacuation plan/ procedures for site and labour camps
- Job Safety Analysis for high risk jobs
- Procedures for reporting & investigation of accidents and near misses.
- HSE Inspection
- HSE Training programmes at project site
- HSE Awareness programmes at project site
- Reference to Rules, Regulations and statutory requirements.
- HSE documentation viz reporting, analysis & record keeping.

4.2 During Job Execution

Contractor shall implement approved Health, Safety and Environment management programme including but not limited to as brought out under para 3.0. Contractor shall also ensure:

- to arrange workmen compensation insurance, registration under ESI Act, third party liability insurance, registration under BOCW Act, etc, as applicable.

- to arrange all HSE permits before start of activities (as applicable), like permits for hot work, working at heights (Refer Format No. HSE-6), confined space (Refer Format No. HSE-7), Radiation Work Permit (Refer Format No. HSE-8), Demolishing/ Dismantling Work Permit (Refer Format No. HSE-9),Permit for erection/modification & dismantling of scaffolding(Refer Format No:HSE-14), Permit for heavy lift/critical erection (Refer Format No:HSE-15) ,Permit for energy Isolation & De-isolation" (HSE-16) ,storage of chemical / explosive materials & its use and implement all precautions mentioned therein. In this regard, requirements of *Oil industry Safety Directorate Standard No*. Std -105 "Work Permit Systems" shall be complied with while working in existing Oil or Gas processing plants.

- to submit, timely, the completed checklist on HSE activities in Format No.HSE-1, Monthly HSE report in Format No.HSE-5 (use of web based package (www.eil.co.in/conthse) is compulsory wherever the facility is available else a hard copy is to be submitted), accident/ incident reports, investigation reports etc. as per EIL/Owner requirements. Compliance of instructions on HSE shall be done by Contractor and informed urgently to EIL/Owner.

- that his top most executive at site attends all the Safety Committee/HSE meetings arranged by EIL/Owner and carries out safety walk through regularly. Only in case of his absence

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from site that a second senior most person shall be nominated by him, in advance, and communicated to EIL/Owner for performing the above tasks.

- display at site office and at prominent locations HSE Policy, caution boards, list of hospitals, emergency services available, safety signs like Men at work, Speed Limits, Hazardous Area, various do's & don'ts, etc.

- provide posters, banners for safe working to promote safety consciousness.

- identify, assess, analyze & mitigate the construction hazards & incorporate relevant control measures before actually executing site works. (HIRAC = Hazard Identification, Risk Analysis and Control).

- arrange testing, examination, inspection of own as well as borrowed construction equipments / machinery (stationary & mobile) before being used at site and also at periodical interval, through own resources and also by 3rd party competent agencies (as deemed fit in statutes). Records of such test, examination etc. shall be maintained & shall be submitted to EIL/Owner as & when asked for.

- carryout audits/inspection (internal & external) at his works as well as sub contractor works as per approved HSE plan/procedure/programme & submit the compliance reports of identified shortfalls for EIL/Owner review.

- arranging HSE training for site workmen (of his own & sub contractors) through internal or external faculty at periodical intervals.

- assistance & cooperate during HSE audits by EIL/Owner or any other 3rd party and submit compliance report.

- generate & submit of HSE records/report as per this specification.

- apprise EIL/Owner on HSE activities at site regularly.

- carry-out all dismantling activities safely, with prior approval of EIL/Owner representative.

- The Contractor shall ensure that "Hot works" and painting works do not continue at the same place / location at project site for which chance or probability of "fire" incident exists.

4.3 During Short Listing of the Sub-Contractors

The contractor shall review the HSE management system of the sub-contractors in line with the requirements given in this specification. The contractor shall be held responsible for the shortcomings observed in the HSE management system of the sub-contractor(s) during execution of the job.

5.0 RECORDS

At the minimum, the contractor shall maintain/ submit HSE records in the following reporting formats/:

Safety Walk Through Report	HSE-1
Accident/ Incident Report	HSE-2
Supplementary Accident/ Incident Investigation report	HSE-3
Near Miss Incident Report	HSE-4

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Monthly HSE Report	HSE-5
Permit for working at height	HSE-5
Permit for working in confined space	HSE-7
Permit for radiation work	HSE-8
Permit for demolishing/ dismantling	HSE-9
Daily Safety checklist	HSE-10
House keeping Assessment & compliance	HSE-11
Inspection of temporary electrical booth/installation	HSE-12
Inspection for scaffolding	HSE-13
Permit for erection/modification &dismantling of scaffolding	HSE-14
Permit for heavy lift/critical erection.	HSE-15
Permit for Energy isolation and de-isolation.	HSE-16
Permit for Excavation	HSE-17
Inspection reports of Equipment/tools/tackles	*
Report of Toolbox talks	As indicated in specification
PPE issue report/register	*
Site inspection reports	*
Training records	*

(*) The formats shall be developed in consultation with EIL/Owner

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APPENDIX-A
(Sheet 1 of 2)

A.	**IS CODES ON HSE**
SP: 53	Safety code for the use, Care and protection of hand operated tools.
IS: 838	Code of practice for safety & health requirements in electric and gas welding and cutting operations
IS: 1179	Eye & Face precautions during welding, equipment etc.
IS: 1860	Safety requirements for use, care and protection of abrasive grinding wheels.
IS: 1989 (Pt -II)	Leather safety boots and shoes
IS: 2925	Industrial Safety Helmets
IS: 3016	Code of practice for fire safety precautions in welding & cutting operation.
IS: 3043	Code of practice for earthing
IS: 3764	Code of safety for excavation work
IS: 3786	Methods for computation of frequency and severity rates for industrial injuries and classification of industrial accidents
IS: 3696	Safety Code of scaffolds and ladders
IS: 4083	Recommendations on stacking and storage of construction materials and components at site
IS: 4770	Rubber gloves for electrical purposes
IS: 5121	Safety code for piling and other deep foundations
IS: 5216 (Pt-I)	Recommendations on Safety procedures and practices in electrical works
IS: 5557	Industrial and Safety rubber lined boots
IS: 5983	Eye protectors
IS: 6519	Selection, care and repair of Safety footwear
IS: 6994 (Pt-I)	Industrial Safety Gloves (Leather & Cotton Gloves)
IS: 7293	Safety Code for working with construction Machinery
IS: 8519	Guide for selection of industrial safety equipment for body protection
IS: 9167	Ear protectors
IS: 11006	Flash back arrestor (Flame arrestor)
IS: 11016	General and safety requirements for machine tools and their operation
IS: 11057	Specification for Industrial safety nets
IS: 11226	Leather safety footwear having direct moulded rubber sole
IS: 11972	Code of practice for safety precaution to be taken when entering a sewerage system
IS: 13367	Code of practice-safe use of cranes
IS: 13416	Recommendations for preventive measures against hazards at working place

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APPENDIX-A
(Sheet 2 of 2)

B. INTERNATIONAL STANDARDS ON HSE

Safety Glasses	:	ANSI Z 87.1, ANSI ZZ 87.1, AS 1337, BS 2092, BS 1542, BS 679, DIN 4646/ 58311
Safety Shoes	:	ANSI Z 41.1, AS 2210, EN 345
Hand Gloves	:	BS 1651
Ear Muffs	:	BS 6344, ANSI S 31.9
Hard Hat	:	ANSI Z 89.1/89.2, AS 1808 , BS 5240, DIN 4840
Goggles	:	ANSI Z 87.1
Face Shield	:	ANSI Z 89.1
Breathing Apparatus	:	BS 4667, NIOSH
Welding & Cutting	:	ANSI Z 49.1
Safe handling of compressed	:	P-1 (Compressed Gas Association Gases in cylinders 1235 Jefferson Davis Highway, Arlington VA 22202 - USA)
Full body harness	:	EN-361
Lanyard	:	EN-354
Karabiner	:	EN-362 and EN-12275

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APPENDIX-B

DETAILS OF FIRST AID BOX

SL. NO.	DESCRIPTION		QUANTITY
1.	Small size Roller Bandages, 1 Inch Wide	(Finger Dressing small)	6 Pcs.
2.	Medium size Roller Bandages, 2 Inches Wide	(Hand & Foot Dressing)	6 Pcs.
3.	Large size Roller Bandages, 4 Inches Wide	(Body Dressing Large)	6 Pcs.
4.	Large size Burn Dressing	(Burn Dressing Large)	4 Pkts.
5.	Cotton Wool	(20 gms packing)	4 Pkts.
6.	Antiseptic Solution Dettol (100 ml.) or Savlon		1 Bottle
7.	Mercurochrome Solution (100 ml.) 2% in water		1 Bottle
8.	Ammonia Solution (20 ml.)		1 Bottle
9.	A Pair of Scissors		1 Piece
10.	Adhesive Plaster (1.25 cm X 5 m)		1 Spool
11.	Eye pads in Separate Sealed Pkt.		4 pcs.
12.	Tourniqut		1 No.
13.	Safety Pins		1 Dozen
14.	Tinc. Iodine/ Betadin (100 ml.)		1 Bottle
15.	Polythene Wash cup for washing eyes		1 No.
16.	Potassium Permanganate (20 gms.)		1 Pkt.
17.	Tinc. Benzoine (100 ml.)		1 Bottle
18.	Triangular Bandages		2 Nos.
19.	Band Aid Dressing		5 Pcs.
20.	Iodex/Moov (25 gms.)		1 Bottle
21.	Tongue Depressor		1 No.
22.	Boric Acid Powder (20 gms.)		2 Pkt.
23.	Sodium Bicarbonate (20 gms.)		1 Pkt.
24.	Dressing Powder (Nebasulf) (10 gms.)		1 Bottle
25.	Medicinal Glass		1 No.
26.	Duster		1 No.
27.	Booklet (English & Local Language)		1 No. each
28.	Soap		1 No.
29.	Toothache Solution		1 No.
30.	Vicks (22 gms.)		1 Bottle
31.	Forceps		1 No.
32.	Note Book		1 No.
33.	Splints		4 Nos.
34.	Lock		1 Piece
35.	Life Saving/Emergency/Over-the counter Drugs		As decided at site

Box size: 14" x 12" x 4"

Note : The medicines prescribed above are only indicative. Equivalent medicines can also be used. A prescription, in this regard, shall be required from a qualified Physician.

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APPENDIX-C

TYPE OF FIRES VIS-À-VIS FIRE EXTINGUISHERS

Fire → / Fire Extinguisher ↓	Water	Foam	CO_2	Dry Powder	Multi purpose (ABC)
Originated from paper, clothes, wood	✔	✔	can control minor surface fires	can control minor surface fires	✔
Inflammable liquids like alcohol, diesel, petrol, edible oils, bitumen	✖	✔	✔	✔	✔
Originated from gases like LPG, CNG, H_2	✖	✖	✔	✔	✔
Electrical fires	✖	✖	✔	✔	✔

LEGEND : ✔ : CAN BE USED

✖ : NOT TO BE USED

Note: Fire extinguishing equipment must be checked at least once a year and after every use by an authorized person. The equipment must have an inspection label on which the next inspection date is given. Type of extinguisher shall clearly be marked on it.

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APPENDIX-D

List of Statutory Acts & Rules Relating to HSE

- The Indian Explosives Act and Rules
- The Motor Vehicle Act and Central Motor Vehicle Rules
- The Factories Act and concerned Factory Rules
- The Petroleum Act and Petroleum Rules
- The Workmen Compensation Act
- The Gas Cylinder Rules and the Static & Mobile Pressure Vessels Rules
- The Indian Electricity Act and Rules
- The Indian Boiler Act and Regulations
- The Water (Prevention & Control & Pollution) Act
- The Water (Prevention & Control of Pollution) Cess Act
- The Mines & Minerals (Regulation & Development) Act
- The Air (Prevention & Control of Pollution) Act
- The Atomic Energy Act
- The Radiation Protection Rules
- The Indian Fisheries Act
- The Indian Forest Act
- The Wild Life (Protection) Act
- The Environment (Protection) Act and Rules
- The Hazardous Wastes (Management & Handling) Rules
- The Manufacturing, Storage & import of Hazardous Chemicals Rules
- The Public Liability Act
- The Building and Other Construction Workers (Regulation of Employment and Condition of service) Act
- Other statutory acts Like EPF, ESIS, Minimum Wage Act.

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APPENDIX-E
(Sheet 1 of 12)

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
(A) EXCAVATION Pit Excavation upto 3.0m	Falling into pit	Personal injury	Provide guard rails/ barricade with warning signal Provide at least two entries/ exits. Provide escape ladders.
	Earth Collapse	Suffocation/ Breathlessness Buried	Provide suitable size of shoring and strutting, if required. Keep soil heaps away from the edge equivalent to 1.5m or depth of pit whichever is more. Don't allow vehicles to operate too close to excavated areas. Maintain at least 2m distance from edge of cut. Maintain sufficient angle of repose. Provide slope not less than 1:1 and suitable bench of 0.5m width at every 1.5m depth of excavation in all soils except hard rock. Battering/benching the sides.
	Contact with buried electric cables Gas/ Oil Pipelines	Electrocution Explosion	Obtain permission from competent authorities, prior to excavation, if required. Locate the position of buried utilities by referring to plant drawings. Start digging manually to locate the exact position of buried utilities and thereafter use mechanical means.
Pit Excavation beyond 3.0m	Same as above plus Flooding due to excessive rain/ underground water	Can cause drowning situation	Prevent ingress of water Provide ring buoys Identify and provide suitable size dewatering pump or well point system
	Digging in the vicinity of existing Building/ Structure	Building/Structure may collapse Loss of health & wealth	Obtain prior approval of excavation method from local authorities. Use under-pining method Construct retaining wall side by side.
	Movement of vehicles/ equipments close to the edge of cut.	May cause cave-in or slides. Persons may get buried.	Barricade the excavated area with proper lighting arrangements Maintain at least 2m distance from edge of cut and use stop blocks to prevent over-run Strengthen shoring and strutting

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APPENDIX-E
(Sheet 2 of 12)

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
Narrow deep excavations for pipelines, etc.	Same as above plus Frequent cave-in or slides	May cause severe injuries or prove fatal	Battering/benching of sides Provide escape ladders
	Flooding due to Hydro- static testing	May arise drowning situation	Same as above plus Bail out accumulated water Maintain adequate ventilation.
Rock by excavation blasting	Improper handling of explosives	May prove fatal	Ensure proper storage, handling & carrying of explosives by trained personnel. Comply with the applicable explosive acts & rules.
	Uncontrolled explosion	May cause severe injuries or prove fatal	Allow only authorized persons to perform blasting operations. Smoking and open flames are to be strictly prohibited
	Scattering of stone pieces in atmosphere	Can hurt people	Use PPE like goggles, face mask, helmets etc.
Rock excavation by blasting (Contd)	Entrapping of persons/ animals.	May cause severe injuries or prove fatal	Barricade the area with red flags and blow siren before blasting.
	Misfire	May explode suddenly	Do not return to site for at least 20 minutes or unless announced safe by designated person.
Piling Work	Failure of pile-driving equipment	Can hurt people	Inspect Piling rigs and pulley blocks before the beginning of each shift.
	Noise pollution	Can cause deafness and psychological imbalance.	Use personal protective equipments like ear plugs, muffs, etc.
	Extruding rods/casing	Can hurt people	Barricade the area and install sign boards Provide first-aid
	Working in the vicinity of 'Live-Electricity'	Can cause electrocution/ Asphyxiation	Keep sufficient distance from Live-Electricity as per IS code. Shut off the supply, if possible Provide artificial/rescue breathing to the injured
(B) CONCRETING	Air pollution by cement	May affect Respiratory System	Wear respirators or cover mouth and nose with wet cloth.
	Handling of ingredients	Hands may get injured	Use gloves & other PPE.
	Protruding reinforcement rods.	Feet may get injured	Use Provide platform above reinforcement for movement of workers.

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APPENDIX-E
(Sheet 3 of 12)

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
	Earthing of electrical mixers, vibrators, etc. not done.	Can cause electrocution/ asphyxiation	Ensure earthing of equipments and proper functioning of electrical circuit before commencement of work.
	Falling of materials from height	Persons may get injured	Use hard hats Remove surplus material immediately from work place. Ensure lighting arrangements during night hours
	Continuous pouring by same gang	Cause tiredness of workers and may lead to accident.	Insist on shift pattern Provide adequate rest to workers between subsequent pours.
	Revolving of concrete mixer/ vibrators	Parts of body or clothes may get entrapped.	Allow only mixers with hopper Provide safety cages around moving motors Ensure proper mechanical locking of vibrator
Super-structure	Same as above plus Deflection in props or shuttering material	Shuttering/props may collapse and prove fatal	Avoid excessive stacking on shuttering material Check the design and strength of shuttering material before commencement of work Rectify immediately the deflection noted during concreting.
	Passage to work place	Improperly tied and designed props/planks may collapse	Ensure the stability and strength of passage before commencement of work. Do not overload and stand under the passage.
(C) REINFOR-CEMENT	Curtailment and binding of rods	Persons may get injured	Use PPE like gloves, shoes, helmets, etc. Avoid usage of shift tools
	Carrying of rods for short distances/at heights	Workers may get injured their hands and shoulders.	Provide suitable pads on shoulders and use safety gloves. Tie up rods in easily liftable bundles Ensure proper staging.
	Checking of clear distance/ cover with hands	Rods may cut or injure the fingers	Use measuring devices like tape, measuring rods, etc.
	Hitting projected rods and standing on cantilever rods.	Persons may get injured and fell down	Use safety shoes and avoid standing unnecessarily on cantilever rods Avoid wearing of loose clothes

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APPENDIX-E
(Sheet 4 of 12)

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
	Falling of material from height	May prove fatal	Use helmets Provide safety nets
	Transportation of rods by trucks/ trailers	Protruded rods may hit the persons	Use red flags/lights at the ends Do not protrude the rods in front of or by the side of driver's cabin. Do not extend the rods 1/3rd of deck length or 1.5m whichever is less
(D)WELDING AND GAS CUTTING	Welding radiates invisible ultraviolet and infra-red rays	Radiation can damage eyes and skin.	Use specified shielding devices and other PPE of correct specifications. Avoid thoriated tungsten electrodes for GTAW
	Improper placement of oxygen and acetylene cylinders	Explosion may occur	Move out any leaking cylinder Keep cylinders in vertical position Use trolley for transportation of cylinders and chain them Use flashback arrestors
	Leakage/ cuts in hoses	May cause fire	Purge regulators immediately and then turn off Never use grease or oil on oxygen line connections and copper fittings on acetylene lines Inspect regularly gas carrying hoses Always use red hose for acetylene & other fuel gases and black for oxygen
	Opening-up of cylinder	Cylinder may burst	Always stand back from the regulator while opening the cylinder Turn valve slowly to avoid bursting Cover the lug terminals to prevent short circuiting
	Welding of tanks, container or pipes storing flammable liquids	Explosion may occur	Empty & purge them before welding Never attach the ground cable to tanks, container or pipe storing flammable liquids Never use LPG for gas cutting

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APPENDIX-E
(Sheet 5 of 12)

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES …(Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
(E) RADIOGRAPHY	Ionizing radiation	Radiations may react with the skin and can cause cancer, skin irritation, dermatitis, etc.	Ensure Safety regulations as per BARC/AERB before commencement of job. Cordon off the area and install Radiation warning symbols Restrict the entry of unauthorized persons Wear appropriate PPE and film badges issued by BARC/AERB
	Transpor-tation and Storage of Radiog-raphy source	Same as above	Never touch or handle radiography source with hands Store radiography source inside a pit in an exclusive isolated storage room with lock and key arrangement. The pit should be approved by BARC/AERB. Radiography source should never be carried either in passenger bus or in a passenger compartment of trains. BARC/AERB has to be informed before source movement. Permission from Director General of Civil Aviation is required for booking radio isotopes with airlines.
	Loss of Radio isotope	Same as above	Try to locate with the help of Survey Meter. Inform BARC/AERB (*)
(F) ELECTRICAL INSTALLATION AND USAGE	Short circuiting	Can cause Electrocution or Fire	Use rubberized hand gloves and other PPE Don't lay wires under carpets, mats or door ways. Allow only licensed electricians to perform on electrical facilities Use one socket for one appliance Ensure usage of only fully insulated wires or cables Don't place bare wire ends in a socket Ensure earthing of machineries and equipments Do not use damaged cords and avoid temporary connections Use spark-proof/flame proof type field distribution boxes.

(*) Atomic Energy Regulatory Board (AERB),
Bhabha Atomic Research Centre (BARC)
Anushaktinagar, Mumbai – 400 094

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APPENDIX-E
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CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
			Do not allow open/bare connections Provide all connections through ELCB Protect electrical cables/equipment's from water and naked flames Check all connections before energizing
	Overloading of Electrical System	Bursting of system can occur which leads to fire	Display voltage and current ratings prominently with 'Danger' signs. Ensure approved cable size, voltage grade and type Switch off the electrical utilities when not in use Do not allow unauthorized connections. Ensure proper grid wise distribution of Power
	Improper laying of overhead and underground transmission lines/cables	Can cause electrocution and prove fatal	Do not lay unarmoured cable directly on ground, wall, roof of trees Maintain at least 3m distance from HT cables All temporary cables should be laid at least 750 mm below ground on 100 mm fine sand overlying by brick soling Provide proper sleeves at crossings/ inter-sections Provide cable route markers indicating the type and depth of cables at intervals not exceeding 30m and at the diversions/termination
(G) FIRE PREVENTION AND PROTECTION	Small fires can become big ones and may spread to the surrounding areas	Cause burn injuries and may prove fatal	In case a fire breaks out, press fire alarm system and shout "Fire, Fire" Keep buckets full of sand & water/ fire extinguishing equipment near hazardous locations Confine smoking to 'Smoking Zones' only. Train people for using specific type of fire fighting equipments under different classes of fire Keep fire doors/shutters, passages and exit doors unobstructed Maintain good housekeeping and first-aid boxes (for details refer Appendix-B) Don't obstruct assess to Fire extinguishers. Do not use elevators for evacuation during fire. Maintain lightening arrestors for elevated structures Stop all electrical motors with internal combustion

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APPENDIX-E
(Sheet 7 of 12)

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
			Move the vehicles from dangerous locations Remove the load hanging from the crane booms Remain out of the danger areas.
	Improper selection of Fire extinguisher	It may not extinguish the fire	Ensure usage of correct fire extinguisher meant for the specified fire (for details refer Appendix-C). Do not attempt to extinguish Oil and electric fires with water. Use foam cylinders/CO_2/sand or earth.
	Improper storage of highly inflammable substances	Same as above	Maintain safe distance of flammable substances from source of ignition Restrict the distribution of flammable materials to only min. necessary amount Construct specifically designed fuel storage facilities Keep chemicals in cool and dry place away from heat. Ensure adequate ventilation Before welding operation, remove or shield the flammable material properly Store flammable materials in stable racks, correctly labeled preferably with catchment trays. Wipe off the spills immediately
	Short circuiting of electrical system	Same as above Can cause Electrocution	Don't lay wires under carpets, mats or door ways Use one socket for one appliance. Use only fully insulated wires or cables Do not allow open/bare connections Provide all connections through ELCB Ensure earthing of machineries and equipments
(H) VEHICULAR MOVEMENT	Crossing the Speed Limits (Rash driving)	Personal injury	Obey speed limits and traffic rules strictly Always expect the unexpected and be a defensive driver Use seat belts/helmets Blow horn at intersections and during overtaking operations. Maintain the vehicle in good condition Do not overtake on curves, bridges and slopes
	Adverse weather condition	Same as Above	Read the road ahead and ride to the left Keep the wind screen and lights clean Do not turn at speed. Recognize the hazard, understand the defense and act correctly in time.

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APPENDIX-E
(Sheet 8 of 12)

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
	Consuming alcohol before and during the driving operation	Same as above	Alcohol and driving do not mix well. Either choose alcohol or driving. If you have a choice between hitting a fixed object or an on-coming vehicle, hit the fixed object Quit the steering at once and become a passenger. Otherwise take sufficient rest and then drive. Do not force the driver to drive fast and round the clock. Do not day dream while driving
	Falling objects/ Mechanical failure	May prove fatal	Ensure effective braking system, adequate visibility for the drives, reverse warning alarm.. Proper maintenance of the vehicle as per manufacturer instructions
(I) PROOF TESTING (HYDROSTATIC /PNEUMATIC TESTING)	Bursting of piping Collapse of tanks Tanks flying off	May cause injury and prove fatal	Prepare test procedure & obtain EIL/owner's approval Provide separate gauge for pressurizing pump and piping/equipment Check the calibration status of all pressure gauges, dead weight testers and temperature recorders Take dial readings at suitable defined intervals and ensure most of them fall between 40-60% of the gauge scale range Provide safety relief valve (set at pressure slightly higher than test pressure) while testing with air/ nitrogen Ensure necessary precautions, stepwise increase in pressure, tightening of bolts/nuts, grouting, etc. before and during testing Keep the vents open before opening any valve while draining out of water used for hydro-testing of tanks. Pneumatic testing involves the hazard of released energy stored in compressed gas. Specific care must therefore be taken to minimize the chance of brittle failure during a pneumatic leak test. Test temperature is important in this regard and must be considered when the designer chooses the material of construction.

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APPENDIX-E
(Sheet 9 of 12)

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
			A pressure relief device shall be provided, having a set pressure not higher than the test pressure plus the lesser of 345 KPa (50 psi) or 10% of the test pressure. The gas used as test fluid, if not air, shall be nonflammable and nontoxic.
(J) WORKING AT HEIGHTS	Person can fall down	May sustain severe injuries or prove fatal	Provide guard rails/barricade at the work place Use PPE like full body harness, life line, helmets, safety shoes, etc. Obtain a permit before starting the work at height above 3 meters Fall arrest and safety nets, etc. must be installed Provide adequate working space (min. 0.6 m) Tie/weld working platform with fixed support Use roof top walk ladder while working on a slopping roofs Avoid movement on beams
		May hit the scrap/material stacked at the ground or in between	Keep the work place neat and clean Remove the scrap immediately
	Material can fall down	May hit the workers working at lower levels and prove fatal	Same as above plus Do not throw or drop materials or equipment from height. I.e. do not *bomb* materials All tools to be carried in a tool-kit Bag or on working uniform Remove scrap from the planks Ensure wearing of helmet by the workers working at lower levels
(K) CONFINED SPACES	Suffocation/ drowning	Unconsciousness, death	Use respiratory devices, if reqd. Avoid over crowding inside a confined space Provide Exhaust fans for ventilation Do not wear loose clothes, neck ties, etc Fulfill conditions of the permit

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APPENDIX-E
(Sheet 10 of 12)

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
			Check for presence of hydrocarbons, O_2 level Obtain work permit before entering a confined space Ensure that the connected piping of the equipment which is to be opened is pressure free, fluid has been drained, vents are open and piping is positively isolated by a blind flange
	Presence of foul smell and toxic substances	Inhalation can pose threat to life	Same as above plus Check for hydrocarbon and Aromatic compounds before entering a confined space Depute one person outside the confined space for continuous monitoring and for extending help in case of an emergency
	Ignition/ flame can cause fire	Person may sustain burn injuries or explosion may occur	Keep fire extinguishers at a hand distance Remove surplus material and scrap immediately Do not smoke inside a confined space Do not allow gas cylinders inside a confined space Use low voltage (24V) lamps for lighting Use tools with air motors or electric tools with max. voltage of 24V Remove all equipments at the end of the day
(L) HANDLING AND LIFTING EQUIPMENTS	Failure of load lifting and moving equipments	Can cause accident and prove fatal	Avoid standing under the lifted load and within the operating radius of cranes Check periodically oil, brakes, gears, horns and tyre pressure of all moving machinery Check quality, size and condition of all chain pulley blocks, slings, U-clamps, D-shackles, wire ropes, etc. Allow crane to move only on hard, firm and leveled ground. Allow lifting slings as short as possible and check gunny packings at the friction points Do not allow crane to tilt its boom while moving Install Safe Load Indicator Ensure certification by applicable authority

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APPENDIX-E
(Sheet 11 of 12)

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
	Overloading of lifting equipments	Same as above	Safe lifting capacity of derricks and winches written on them shall be got verified The max. safe working load shall be marked on all lifting equipments Check the weight of columns and other heavy items painted on them and accordingly decide about the crane capacity, boom and angle of erection Allow only trained operators and riggers during crane operation.
	Overhead electrical wires	Can cause electrocution and fire	Do not allow boom or other parts of crane to come within 3m reach of overhead HT cables Hook and load being lifted shall preferably remain in full visibility of crane operators.
(M) SCAFFOLDING, FORMWORK AND LADDERS	Person can fall down	Person May sustain severe injuries and prove fatal	Provide guard rails for working at height Face ladder while climbing and use both hands. Ladders shall extend about 1m above landing for easy access and tying up purpose Do not place ladders against movable objects and maintain base at 1/4 unit of the working length of the ladder. Suspended scaffolds shall not be less than 500 mm wide and tied properly with ropes No loose planks shall be allowed Use PPE, like helmets, safety shoes,etc
	Failure of scaffolding material	Same as above	Inspect visually all scaffolding materials for stability and anchoring with permanent structures. Design scaffolding for max. load carrying capacity. Scaffolding planks shall not be less than 50X250 mm full thickness lumber or equivalent. These shall be cleated or secured and must extend over the end supports by at least 150mm and not more than 300mm Don't overload the scaffolds Do not splice short ladders to make a longer one. Vertical ladders shall not exceed 6m.
	Material can fall down	Persons working at lower level gets injured	Remove excess material and scrap immediately Carry the tools in a tool-kit bag only Provide safety nets

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APPENDIX-E
(Sheet 12 of 12)

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
(N) STRUCTURAL WORKS	Personal negligence and danger of fall	Can cause injury or casualty	Do not take rest inside rooms built for welding machines or electrical distribution system. Avoid walking on beams at height Wear helmet with chin strap and full body harness while working at height. Use hand gloves and goggles during grinding operations Cover or mark the sharp and projected edges Do not stand within the operating radius of cranes
	Lifting/ slipping of material	Same as above	Do not stand under the lifted load Stack properly all the materials. Avoid slippage during handling Control longer pieces lifted up by cranes from both ends Remove loose materials from height Ensure tightening of all nuts & bolts
(O) PIPELINE WORKS	Erection/ lowering failure	Can cause injury	Do not stand under the lifted load Do not allow any person to come within the radii of the side boom handling pipes Check the load carrying capacity of the lifting tools & tackles Use safe Load Indicators Use appropriate PPEs
	Other	Same as above	Wear gum boots in marshy areas Allow only one person to perform signaling operations while lowering of pipes Provide night caps on pipes Provide end covers on pipes for stoppage of pigs while testing/ cleaning operations
(P) GRIT BLASTING	Pollution in neighboring area, hit by grits and high pressure air	Can cause personal injury	Ensure the blasting is done in enclosed shed. Keep safe distance while blasting operations. Wear positive pressure blast hood or helmet with view –window, ear-muff/plug, gloves, overall or leather coat /apron, rubber shoes.

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APPENDIX-F

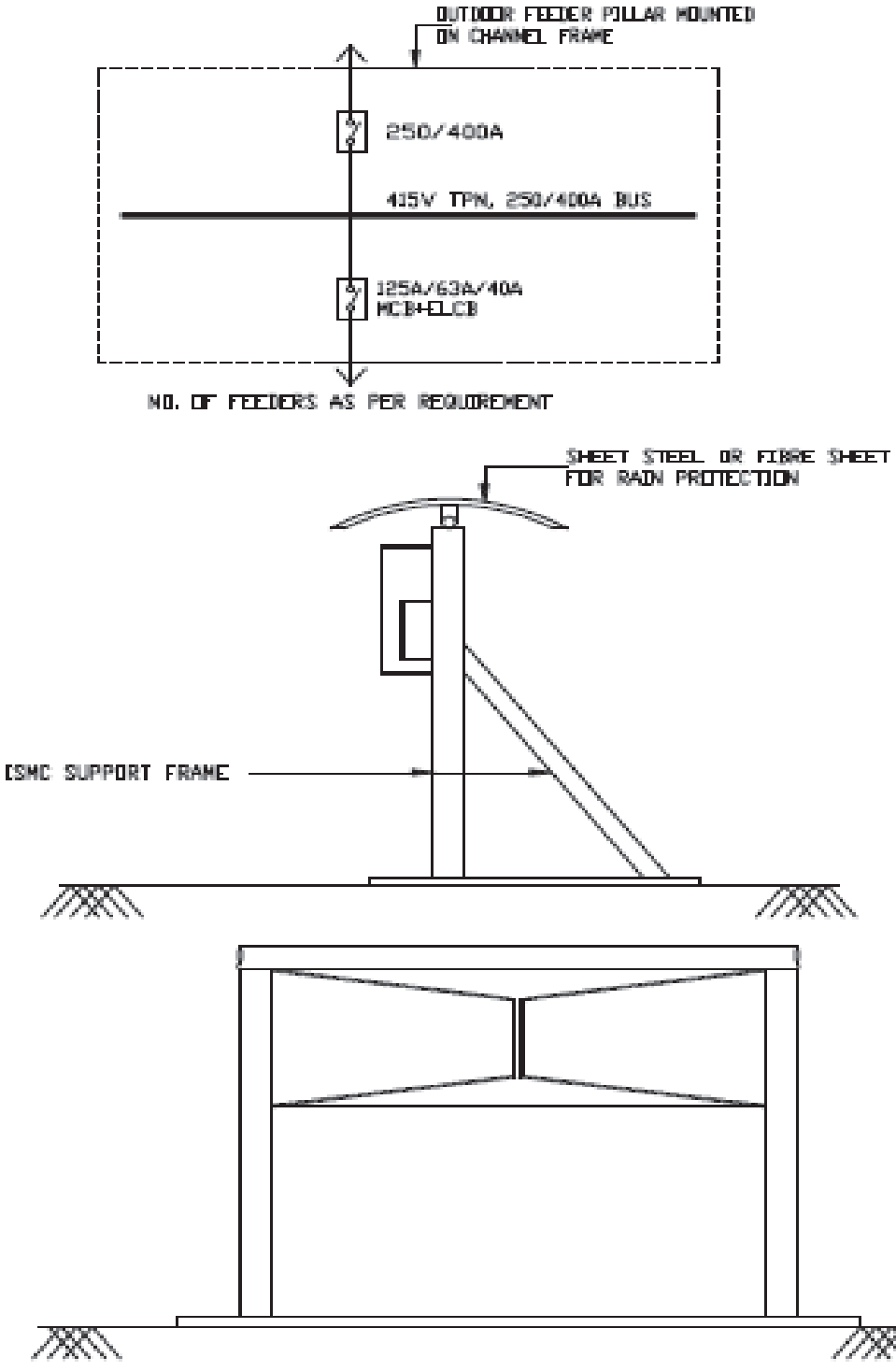
TRAINING SUBJECTS / TOPICS
(For contractors' personnel)

1. The Law & Safety – Statutory Requirement / Applicable statutes / Duties of employer / employee
2. Policy & Administration – Why HSE? / Duties & Responsibilities of Safety Personnel at project site / Effect of incentive on accident prevention
3. HSE & Supervision – Duties of Supervisor / HSE integrated supervision / Who should be held responsible for site accidents?
4. Safety Budget / Cost of Accidents – Direct costs / Indirect costs
5. Hazard Identification / Type of hazards / HIRAC
6. Behavioural Safety & Motivation
7. Housekeeping – Storage / Stacking / Handling of materials / Hydra handling
8. Occupational Health in Construction sector
9. Personal Protective Equipments – Respiratory & Non- respiratory
10. Electricity & Safety – ELCB / Fuse / Powered tools / Project illumination
11. Handling of Compressed Gas – Transportation / Storage / FBAs / Fire prevention
12. Machine Safety – Machine guarding / Maintenance
13. Transportation – Hazards & risks in transp. of materials / ODC consignments
14. Cranes & Other Lifting machinery – Legal requirements vis-à-vis essential safety requirements.
15. Communication – HSE Induction / TBTs / Safety Committee / Safety meeting / Safety propaganda / Publicity.
16. Excavation – Risks & Dangers / Safety measures
17. Working at Heights – Use of ladder / Work on roofs / Scaffolds / Double harness lanyards / Life-line / Fall arrester / Safety Nets / Floor openings
18. Hazards in Welding & important safety precautions
19. Gas Cutting – Hazards & safety measures
20. Fire prevention & fire protection

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APPENDIX - G

CONSTRUCTION POWER BOARD(typ)



NOTES:-

1. CONTRACTOR TO INSTALL TEMPORARY CONST. POWER BOARD AS SHOWN IN THE DRG. ITS LOCATION SHALL BE EASILY ACCESABALE.
2. POWER DISTRIBUTION BOARD SHALL BE EARTHED AT TWO POINTS BY MINIMUM 40X5MM GI STRIP FROM THE AVILABLE GRID ORDIRECTLY CONNECTED TO TWO DIRECTLY DRIVEN EARTH ELECTRODES.
3. DISTRIBUTION BOARD SHALL BE FABRICATED BY USING 14MM CRCA SHEET STEELWITH HINGED DOORSAND ALL COMPONENT MOUNTED IN IT.
4. ALL INCOMING AND OUTGOING CABLESSHALL HAVE BOTTOM ENTRY.

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APPENDIX-H

LIST OF PROCEDURES (MINIMUM) TO BE FORMING PART OF HSE PLAN:-

A. HSE Management Procedures:

- HSE Risk Management (including JSA/HIRA)
- HSE Legal Compliance and Other Requirements
- HSE Objectives & Performance
- HSE Training and Competence (including Induction)
- HSE Motivation & Award Scheme
- HSE Audits
- HSE Meetings
- HSE Sub Contractor Management
- HSE Emergency Management
- HSE Incidents Reporting and Management
- HSE Reports
- HSE Management System Review
- HSE Change Management
- HSE procedure for Behaviour based Safety
- First Aid & Management
- Roles, Responsibility, accountabilities and Authorities

B. Job procedures/Safe Operating procedures

- Setting Up Site & Signage's
- Handling of Electrical Appliances
- Working at Height
- Confined Space Entry
- Permit to Work (including hot works)
- Housekeeping
- Lifting Operations
- Transportation of materials including Manual Handling
- Compressed Air Tools and Units
- Earthmoving Operations & excavation
- Scaffolding
- Fire Prevention/Protection
- Hazardous Substance handling & Storage
- Radiation Hazard
- Personal Protective Equipment

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FORMAT NO. : HSE-1 REV 0

(Sheet 1 of 6)

SAFETY WALK-THROUGH REPORT

(Name & signature of walk through performer to be inserted at the bottom of each page)

Project : _____ Report no. : _____

Date : _____ Contractor : _____

Inspection by :_____ Owner : _____

Frequency : Monthly Job no. : _____

Note : Write 'NA' wherever the item is not applicable

Sl. No.	Item	Satisafctory/ Yes	Non Satisfactory/No	Remarks	Action
1.	HOUSEKEEPING				
a)	Waste containers provided and used				
b)	Sanitary facilities adequate and Clean				
c)	Passageways and Walkways Clear				
d)	General neatness of working areas				
e)	Other				
2.	PERSONNEL PROTECTIVE EQUIPMENT				
a)	Goggles; Shields				
b)	Face protection				
	Hearing protection				
	Foot protection				
e)	Hand protection				
f)	Respiratory Masks etc.				
g)	Full body harness conforming to C€, EN 361				
h)	Hard hat (HDPE)				
i)	Other				
3.	EXCAVATIONS/OPENINGS				
a)	Openings properly covered or barricaded				
b)	Excavations shored				
c)	Excavations barricaded				
d)	Overnight lighting provided				
e)	Other				

Safety walk-through performer (Name & Signature)……..

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FORMAT NO. : HSE-1 REV 0

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Sl. No.	Item	Satisafctory/ Yes	Non Satisfactory/No	Remarks	Action
4.	WELDING & GAS CUTTING				
a)	Gas cylinders chained upright				
b)	Cables and hoses not obstructing				
c)	Screens or shields used				
d)	Flammable materials protected				
e)	Live electrode bits contained properly				
f)	Fire extinguisher (s) accessible				
g)	Other				
5.	SCAFFOLDING & BARRICADING				
a)	Fully decked platforms				
b)	Guard and intermediate rails in place				
c)	Toe boards in place				
d)	Adequate shoring				
e)	Adequate access				
f)	Positive barricading for critical activities				
g)	Installation of warning signs				
h)	Other				
6.	LADDERS				
a)	Extension side rails 1 m above				
b)	Top of landing				
c)	Properly secured				
d)	Angle + 70^0 from horizontal				
e)	Other				

Safety walk-through performer (Name & Signature)……..

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(Sheet 3 of 6)

Sl. No.	Item	Satisafctory/ Yes	Non Satisfactory/No	Remarks	Action
7.	HOISTS, CRANES AND DERRICKS				
a)	Condition of cables and sheaves OK				
b)	Condition of slings, chains, hooks and eyes O.K.				
c)	Inspection and maintenance log-books maintained				
d)	Outriggers used				
e)	Reverse horn installed / active / coupled with gear				
f)	Signs/barricades provided				
g)	Signals observed and understood				
h)	Qualified operators				
i)	Other				
8.	MACHINERY, TOOLS AND EQUIPMENT				
a)	Proper instruction				
b)	Safety devices				
c)	Proper cords				
d)	Inspection and maintenance				
e)	Other				
9.	VEHICLE AND TRAFFIC				
a)	Rules and regulations observed				
b)	Inspection and maintenance				
c)	Licensed drivers				
d)	Other				

Safety walk-through performer (Name & Signature)……

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FORMAT NO. : HSE-1 REV 0

(Sheet 4 of 6)

Sl. No.	Item	Satisafctory/ Yes	Non Satisfactory/No	Remarks	Action
10.	TEMPORARY FACILITIES				
a)	Emergency instructions posted				
b)	Fire extinguishers provided				
c)	Fire-aid equipment available				
d)	Secured against storm damage				
e)	General neatness				
f)	In accordance with electrical requirements				
g)	Other				
11.	FIRE PREVENTION				
a)	Personnel trained & instructed to make use of facility				
b)	Fire extinguishers checked periodically & record maintained				
c)	No smoking in Prohibited areas.				
d)	Fire Hydrants not obstructed ~~Clear~~				
e)	~~Other~~ Regular fire drill conducted				
12.	ELECTRICAL				
a)	Use of 3-core armored cables everywhere				
b)	Usage of 'All insulated' or 'double-insulated' electrical tools				
c)	All electrical connection are routed through ELCB				
d)	Natural Earthing at the source of power (Main DB)				
e)	Continuity and tightness of earth conductor				
f)	Effective covering of junction boxes, panels and other energized wiring places				
g)	Ground fault circuit interrupters provided				
h)	Prevention of tripping hazards maintained				
f)	DCP extinguishers arranged & licensed electrician engaged at site				

Safety walk-through performer (Name & Signature)……

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FORMAT NO. : HSE-1 REV 0

(Sheet 5 of 6)

Sl. No.	Item	Satisafctory/ Yes	Non Satisfactory/No	Remarks	Action
14.	HANDLING AND STORAGE OF MATERIALS				
a)	Safely stored or stacked				
b)	Passageways clear / free from obstructions				
c)	Fire fighting facility in place				
15.	FLAMMABLE GASES AND LIQUIDS				
a)	Containers clearly identified / protected from fire				
b)	Safe storage & transportation arrangement made				
c)	Fire extinguishers positioned nearby				
d)	Facilities kept away from electric spark, hot spatters & ignition source.				
16.	WORKING AT HEIGHT				
a)	Approved Erection plan and work permit in place				
b)	Safe access, Safe work platform & Safety nets provided				
c)	Life lines, Fall arrester, Full body harness ~~and~~ with double lanyards used;				
d)	Health Check record available for workers going up?				
e)	Protective handrails arranged around floor openings				
17.	CONFINED SPACE				
a)	Work Permit obtained from requisite authority				
b)	Test for toxic gas and sufficient availability of oxygen conducted & status				
c)	Supervisor present at site & at least one person outside the confined space for monitoring deputed				
d)	Availability of safe means of entry, exit and ventilation (register for entry & exit maintained)				
e)	Fire extinguisher and first-aid facility ensured				
f)	Lighting provision made by using 24V Lamp				
g)	Proper usage of PPEs ensured				
18.	RADIOGRAPHY				
a)	Proper storage and handling of source as per BARC/ AERB guidelines (authorized radiographer available)				
b)	Work permit obtained				

Safety walk-through performer (Name & Signature)……

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FORMAT NO. : HSE-1 REV 0

(Sheet 6 of 6)

Sl. No.	Item	Satisafctory/ Yes	Non Satisfactory/No	Remarks	Action
c)	Cordoning of the area done				
d)	Use of appropriate PPE's ensured				
e)	HSE training to workers/supervisors imparted during the fortnight (indicate topic)				
f)	Minimum occupancy of workplace ensured				
19.	HEALTH CHECKS				
a)	All Workers medically examined and found be fit for working at heights (slinging, rigging, painting etc.) in confined space in excavation / trenching in shot blasting				
b)	Availability of First Aid box with contents				
c)	Proper sanitation at site, office and labour camps				
d)	Arrangement of medical facilities.				
e)	Measures for dealing with illness at site & labour camps.				
f)	Availability of Potable drinking water for workmen & staff.				
g)	Provision of crèches for children.				
h)	Stand by vehicle / ambulance available for evacuation of injured				
20.	ENVIRONMENT				
a)	Chemical and Other Effluents properly disposed				
b)	Cleaning liquid of pipes disposed off properly				
c)	Seawater used for hydro-testing disposed off as per agreed procedure				
d)	Lubricant Waste/Engine oils properly disposed				
e)	Waste from Canteen, offices, sanitation etc disposed properly				
f)	Disposal of surplus earth, stripping materials, Oily rags and combustible materials done properly				
g)	Green belt protection				

Safety walk-through performer (Name & Signature)……

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FORMAT NO. : HSE-2 REV 0

(Sheet 1 of 3)

ACCIDENT / INCIDENT REPORT

(To be submitted by Contractor after every Incident / Accident within 24 hours to EIL/ Owner)

Report No.: _____ **Date**: _____

Project site: _____ **Name of work:** _____

Contractor's name: _____ Contractor's Job Engineer (name) _____

Non-disabling injury (Non-LTA)	Hospitalized but resumed duty before end of 48 hrs	
Disabling injury (other LTA)	Hospitalized & failed to resume duty within next 48 hrs	
Fatal (LTA):	Death / Expiry	
First Aid case (non LTA)	Resume duty after first aid	

Name of the injured: _____ Father's name of victim: _____

Sub Contractor's Name: ……

Gate Pass No.:…….. Age: _____Yrs. Victim's medical fitness exam. (Pre-empl.) date: - _____

Date & time of Accident / Incident: _____

Names of Witnesses: (1_____ (2)_____ (3) _____

Profession of victim:

Bar bender		Carpenter		Meson	
Fitter		Helper		Gas cutter	
Grinder		Welder		Electrician	
Driver		Rigger		M/c.operator	
Engineer		Manager		Other/specify	

Qualification

No formal education		Non-Matriculate		Matriculate	
Graduate		Post- grad		Other/specify	

Job Experience

NIL		Less than 2 yrs		2-5 yrs	
5-10 yrs		11-15 yrs		15 years and above	

Location where the incident happened: _____

_____

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FORMAT NO. : HSE-2 REV 0

(Sheet 2 of 3)

Activity / Works that was continuing during incident / accident: -

Excavation		Demolition		Concrete carrying	
Concrete pouring		Transportation of materials (manually)		Transportation of materials (mechanically)	
Work on or adjacent to water		Work at height (+2.0 mts)		Scaffold preparation	
Scaffold dismantling		Piling works		Welding	
Grinding		Gas-cutting		Pipe fit-ups & fabrication	
Structural fabrications		Machine works		Hydro-testing works	
Electrical works		Erection activities		Other/specify	

What exactly the victim was doing just before the incident / accident? .....

…….

…….

Nature of injury:

Bruise or Contusion		Abrasion (superficial wound)		Sprains or strains	
Cut or Laceration		Puncture or Open wound		Burn	
Inhalation of toxic or Poisonous fumes or gases		Absorption		Amputation	
Fracture		Other/specify			

Parts of body involved in incident / accident

Head		Face		Eyes	
Throat		Arm (above wrist)		Hand (including wrist)	
Fingers		Truck (Abdomen / Back / Chest / Shoulder)		Throat	
Leg (above ankle)		Foot (incl. ankle)		Toes	
Multiple				Other/specify	

Accident type:

Struck against		Struck by		Fall from Elevation	
Fall on same level		caught in		caught under	
caught in between		Rubbed or abraded		Contact with (Electricity)	
Contact with (Temp./ extremes)		Contact with chemicals or oils		Vehicle accident	
Other/specify					

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FORMAT NO. : HSE-2 REV 0

(Sheet 3 of 3)

Medical Aid provided: - (indicate specific aids / treatment etc.)-

……

……..

Actions taken to prevent recurrence of similar incident / accident: ……

……

……

……

……

……

……...

Intimation to local authorities (Dist Collector / Local Police Station / ESI authority): Yes / No / NA.

If yes, to whom ……..

Safety Officer
(Signature and Name)

Site Head / Resident Construction Manager
(Signature and Name)
Stamp of Contractor

To : Owner
: RCM/Site-in-charge EIL (3 copies)
→Divisional Head (Constn) through RCM
→Project Manager, EIL, through RCM

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FORMAT NO. : HSE-3 REV 0

(Sheet 1 of 5)

SUPPLEMENTARY INCIDENT / ACCIDENT INVESTIGATION REPORT
TICK THE APPROPRIATE ONE AS APPLICABLE (furnish within 72 hours)

Supplementary to Incident / Accident Report No: _____ (Copy enclosed)

Report No.: _____ **Date**: _____

Project site: _____ **Name of work:** _____

Contractor's name: _____ Contractor's Job Engineer (name) _____

Non-disabling injury (Non-LTA)	Hospitalized but resumed duty before end of 48 hrs	
Disabling injury (other LTA)	Hospitalized & failed to resume duty within next 48 hrs	
Fatal (LTA):	Death / Expiry	
First Aid case (non LTA)	Resume duty after first aid	

Name of the injured: _____ Father's name of victim: _____

Sub Contractor's Name: …….

Gate Pass No.:…….. Age: _____Yrs. Victim's medical fitness exam. (Pre-empl.) date: - _____

Date & time of Accident / Incident: _____

Names of Witnesses: (1_____ (2)_____ (3) _____

Profession of victim:

Bar bender		Carpenter		Meson	
Fitter		Helper		Gas cutter	
Grinder		Welder		Electrician	
Driver		Rigger		M/c.operator	
Engineer		Manager		Other/specify	

Qualification

No formal education		Non-Matriculate		Matriculate	
Graduate		Post- grad		Other/specify	

Job Experience

NIL		Less than 2 yrs		2-5 yrs	
5-10 yrs		11-15 yrs		15 years and above	

Location where the incident happened: _____

_____

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FORMAT NO. : HSE-3 REV 0

(Sheet 2 of 5)

Activity / Works that was continuing during incident / accident: -

Excavation		Demolition		Concrete carrying	
Concrete pouring		Transportation of materials (manually)		Transportation of materials (mechanically)	
Work on or adjacent to water		Work at height (+2.0 mts)		Scaffold preparation	
Scaffold dismantling		Piling works		Welding	
Grinding		Gas-cutting		Pipe fit-ups & fabrication	
Structural fabrications		Machine works		Hydro-testing works	
Electrical works		Erection activities		Other/specify	

What exactly the victim was doing just before the incident / accident? .....

……

……

Particular of tools & tackles being used and condition of the same after incident/accident:
……
……

Description of Incident/Accident (How the incident was caused):
……
……
……

Nature of injury:

Bruise or Contusion		Abrasion (superficial wound)		Sprains or strains	
Cut or Laceration		Puncture or Open wound		Burn	
Inhalation of toxic or Poisonous fumes or gases		Absorption		Amputation	
Fracture		Other/specify			

Parts of body involved in incident / accident

Head		Face		Eyes	
Throat		Arm (above wrist)		Hand (including wrist)	
Fingers		Truck (Abdomen / Back / Chest / Shoulder)		Throat	
Leg (above ankle)		Foot (incl. ankle)		Toes	
Multiple				Other/specify	

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FORMAT NO. : HSE-3 REV 0

(Sheet 3 of 5)

Accident type:

Struck against		Struck by		Fall from Elevation	
Fall on same level		caught in		caught under	
caught in between		Rubbed or abraded		Contact with (Electricity)	
Contact with (Temp./ extremes)		Contact with chemicals or oils		Vehicle accident	
Other/specify					

Name & Designation of person who provided First-Aid to the victim: ----------

Name & Telephone number of Hospital where the victim was treated_____

Mode of transport used for transporting victim – Ambulance / Private car / Tempo / Truck / Others

How much time taken to shift the injured person to Hospital_____

In case of FATAL incident, indicate clearly the BOCW Registration No. of the victim /Company……

Comments of Medical Practitioner, who treated / attended the victim/injured (attached / described here)_____

What actions are taken for investigation of the incident, please indicate clearly – (Video film / Photography / Measurements taken etc……..)

Immediate cause (Please tick the right applicable) –

Hazardous methods or procedures inadequately guarded		Poor housekeeping		Inadequate or improper PPE	
Environmental hazards (excess noise/ space constraint/ inadequate ventilation		improper illumination/Moving on oval surface		Working on dangerous equipment	

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FORMAT NO.: HSE-3 REV 0

(Sheet 4 of 5)

Failure to secure		Horse-play		Failure to use PPE	
Inattention to surroundings		Improper use of hands & body-parts		By-passing safety devices	
Unsafe mixing or placement of tools & tackles		Bypassing standard procedures		Failure in communication	
Operating without authority		Improper use of equipment or tools & tackles		drug or alcoholic influence	
excessive haste		Others(specify)			

Basic cause

Over confidence		Impulsiveness		over-exertion	
Faulty judgement or poor understanding		Failing to keep attention constantly		Nervousness & Fear	
Fatigue		Defective vision		Ill health or sickness	
Slow reaction		Others(specify)			

Root cause

Inadequate Engg		Improper Design		Inadequate Planning & organization	
Inadequate knowledge		Inadequate skill		Inadequate training	
Inadequate supervision		Improper work procedure		Inadequate compliance with standard	
Substandard performance		Inadequate maintenance		Improper inspection	
Others(specify)					

Loss of man days and impact on site works, (if any) –

_____

Remarks from Contractor's Safety Officer / Engineer –

Was the victim performing relevant tasks for which he was engaged /employed? Yes / No
Was the Supervisor present on work-site during the incident? Yes / No
Have the causes of incident rightly identified? Yes / No
Cause of Accident was_____

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FORMAT NO. : HSE-3 REV 0

(Sheet 5 of 5)

Remedial measures recommended by **Safety Officer of Contractor** for avoiding similar incident in future

: ……

……

……

……

……

……

……...

Intimation to local authorities (Dist Collector / Local Police Station / ESI authority): Yes / No / NA.

If yes, to whom ……..

_____

Safety Officer
(Signature and Name)

Site Head / Resident Construction Manager
(Signature and Name)
Stamp of Contractor

To : Owner
: RCM// Site-in-charge of EIL (3 copies)
→ Divisional Head (Constn) through RCM
→ Project Manager EIL, through RCM

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FORMAT NO. : HSE-4 REV 0

NEAR MISS INCIDENT/ DANGEROUS OCCURRENCE SUGGESTED PROFORMA
(to be submitted within 24 hours)

- **Near Miss** : Human injury escaped & no damage to property, equipment or interruption to work.
- **Dangerous Occurrence**: Damage to property, equipment or interruption of work, but not resulting in personal injury/illness, e.g. Fire incident, collapse of structure, crane failure, etc

Report No.: _____

Name of Site: _____ Date: _____

Name of work: _____ Contractor: _____

Incident reported by :

Date & Time of Incident :

Location :

Brief description of incident

Probable cause of incident

Suggested corrective action

Steps taken to avoid recurrence Yes ☐ No ☐

To : Owner
: RCM/Site-in-charge EIL (3 copies)
→ Divisional Head (Constn) through RCM
→ Project Manager EIL, through RCM

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FORMAT NO. : HSE-5 REV 0

MONTHLY HEALTH, SAFETY & ENVIRONMENT (HSE) REPORT

(To be submitted by each Contractor)

Actual work start Date: _____ For the Month of: _____
Project: _____ Report No: _____
Name of the Contractor: _____ Status as on : _____
Name of Work : _____ Job No : _____
(Contractor in consultation with EIL shall generate the reports through web based package(www.eil.co.in/conthse) only.

ITEM		UPTO PREVIOUS MONTH	THIS MONTH	CUMULATIVE
1) Average number of Staff & Workmen (average daily headcount, not man days)				
2) Man-hours worked				
3) Number of Induction programmes conducted				
4) Number of HSE meetings organized at site				
5) Number of HSE awareness programmes conducted at site				
6) Number of Tool Box Talks conducted				
7) Number of Lost Time Accidents (LTA)	Fatal			
	Other LTA			
8) Number of Loss Time Injuries (LTI)	Fatalities			
	Other LTI			
9) Number of Non-Loss Time Accidents				
10) Number of First Aid Cases				
11) Number of Near Miss Incidents				
12) No. of unsafe acts/ practices detected				
13) No. of disciplinary actions taken against staff/ workmen				
14) Man-days lost due to accidents				
15) LTA Free man-hours i.e. LTA free man-hours counted from the Last LTA (enter date: …….)				
16) Frequency Rate (No. of LTA per 2 lacs man-hours worked)				
17) Severity Rate (No. of man days lost per 2 lacs man-hours worked)				
18) Loss Time Injury Frequency (No. of LTI per 2 lacs man-hours worked)				
19) No. of activities for which Job Safety Analysis (JSA) completed				
20) No. of incentives/ awards given				
21) No. of occasions on which penalty imposed by EIL/ Owner				
22) No. of Audits conducted				
23) No. of pending NCs in above Audits				
24) Compensation cases raised with Insurance				
25) Compensation cases resolved and paid to workmen				

26) Whether workmen compensation policy taken			Yes		No
27) Whether workmen compensation policy is valid			Yes		No
28) Whether workmen registered under ESI Act, as applicable			Yes		No

Remarks, if any

Date:

Prepared by Safety Officer (Signature and Name)

Approved by Site Head / Resident Construction Manager (Signature and Name)

To : - OWNER
- RCM EIL (2 copies)

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FORMAT NO. : HSE-6 REV 0

PERMIT FOR WORKING AT HEIGHTS (ABOVE 2.0 METER)

(In duplicate to be issued daily for site and for office)

Permit No…….. Name of Main Contractor……
Name of work executing agency / sub agency / vendor:……...
Date…… Exact Location of work……
Nature of work ……..Duration of work (from) …… (to) ……....
Number of workers covered within this permit……
(*List may be enclosed with name & gate pass numbers*.)

Sl. No.	Items / Subjects	Status of compliance (Yes / No)	
1	Work areas / Equipments inspected		
2	Work area cordoned off		
3	Adequate lighting is provided		
4	Precautions against public traffic taken		
5	Concerned persons in & around have been alerted & cautioned		
6	Hazards / risks involved in routine / non-routine task assessed and control measures have been implemented at specific task		
7	ELCB provided for electrical connection & found working		
8	Ladder safely attached / fixed		
9	Scaffoldings are checked and TAGs are found used correctly		
10	Working platforms are provided and are found sound /safe for use		
11	Safe access & egress arrangements (e.g. ladders, fall arresters, life-lines etc.) are satisfactorily incorporated		
12	Openings on platform / floors are effectively cordoned / covered		
13	Use of following safety gadgets by people working at area under this permit, is checked and found satisfactory - Safety helmet Safety harness (full body) with double lanyard Safety Shoes Safety gloves Safety goggles		
14	Housekeeping of work area found satisfactorily tidy / clean & clear		
15	Adequate measures have been taken for works being continued at the ground level, when simultaneous works are permitted overhead at that very location.		
16	Materials are not thrown from heights on to ground		
17	Medical examination of workers are made & found satisfactory		
18	Responsible job engineer / supervisor found physically present at work spot for overall administration of work as well as safety of people.		

Above items have been checked & compliance has been found in place. Hence work is permitted to start / continue at the above-mentioned location. Work shall not start till identified lapses are rectified.

Additional Precautions, if any …….
……..

Work Permit issued by
Contractor Engineer/RCM

Verification By
Contractor Safety Officer

AT THE END OF THE DAY/WORK:

All works at height are completed & workmen have returned safely from work location at (time)…….. (date)……

(Sig. Contractor Engineer)

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FORMAT NO. : HSE-7 REV 0

CONFINED SPACE ENTRY PERMIT

Project site _____ Sr.No. _____
Name of the work _____ Date _____
Name of Contractor _____ Nature of work _____
Exact location of work _____

Safety Requirements POSITIVE ISOLATION OF THE VESSEL IS MANDATORY

(A) Has the equipment been ?

Y	NR		Y	NR		Y	NR	
☐	☐	Isolated from power/steam/air	☐	☐	water flushed &/or steamed	☐	☐	radiation sources removed
☐	☐	isolated from liquid or gases	☐	☐	Man ways open & ventilated	☐	☐	proper lighting provided
☐	☐	depressurized &/or drained	☐	☐	cont. inert gas flow arranged	☐	☐	
☐	☐	blanked/ blinded/ disconnected	☐	☐	adequately cooled	☐	☐	

(B) Expected Residual Hazards

☐	☐	lack of O_2	☐	☐	combustible gas/ liquid	☐	☐	H_2S / toxic gases
☐	☐	corrosive chemicals	☐	☐	pyrophoric iron / scales	☐	☐	electricity / static
☐	☐	heat/ steam / frost	☐	☐	high humidity	☐	☐	ionizing radiation
☐	☐		☐	☐		☐	☐	

(C) Protection Measures

☐	☐	gloves	☐	☐	ear plug / muff	☐	☐	goggles / face shield
☐	☐	protective clothing	☐	☐	dust / gas / air line mask	☐	☐	personal gas alarm
☐	☐	grounded air duct/blower /AC	☐	☐	attendant with SCBA/air mask	☐	☐	rescue equipment/team
☐	☐	Fire fighting arrangements	☐	☐	safety harness & lifeline	☐	☐	communication equipment
☐	☐		☐	☐		☐	☐	

Authorization / Renewal (It is safe to enter the confined space)

	No. of persons allowed	Name of persons allowed	Signature		Time		Signature
			Contractor's Supervisor	Contractor's Safety Officer	From	To	Workman

Permit Closure :

(A) Entry ☐ was closed ☐ stopped ☐ will continue on ...

(B) ☐ Site left in a safe condition ☐ Housekeeping done

(C) Multilock ☐ removed ☐ key transferred
☐ Ensured all men have come out ☐ Man-ways barricaded

Remarks, if any:

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FORMAT NO. : HSE-8 REV 0

RADIATION WORK PERMIT

Project :
Name of the work :
Name of site contractor :

Sr.No. :
Date :
Job No. :

Location of work :

Source strength :

Cordoned distance (m) :

Name of Radiography agency :

Approved by Owner/EIL ☐

No. of workers engaged :

The following items have been checked &compliance shall be ensured during currency of the permit:

S. No.	Item description	Done
	Safety regulations as per BARC/AERB ensured while source in use/in transit & during storage	
	Area cordoned off / safe working platform provided	
	Lighting arrangements for working during nights ensured	
	Warning signs/ flash lights installed	
	Cold work permit taken (if applicable)	
	PPEs like film badges, dosimeters used	

Additional precautions, if any _____

(Radiography Agency's BARC/AERB authorized Supervisor)

Permission is granted.

Permit is valid from _____ AM/PM _____ Date to _____ AM/PM _____ Date

(Signature of permit issuing authority of site contractor)

Name :Designation: Date:

Permit renewal:

Permit extended up to		Additional precautions required, if any	Sign of issuing authority with date (of site contractor)
Date	Time		

Work completed/ stopped/ area cleared at _____ Hrs of Date _____
(Sign. of permit issuing authority)
Name & Signature of site contractor:

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FORMAT NO. : HSE-9 REV 0

DEMOLISHING/DISMANTLING WORK PERMIT

Project :
Name of the work :
Name of contractor :
Sr.No. :
Date :
Job No. :

Name of sub-contractor :
No. of workers to be engaged:

Line No./ Equipment No./ Structure to be dismantled :

Location details of dismantling/ demolition with sketch : (clearly indicate the area)

The following items have been checked &compliance shall be ensured during currency of the permit:

S. No.	Item description	Done	Not Applicable
	Services like power, gas supply, water, etc. disconnected	☐	☐
	Dismantling/ Demolishing method reviewed & approved	☐	☐
	Usage of appropriate PPEs ensured	☐	☐
	Precautions taken for neighbouring structures	☐	☐
	First-Aid arrangements made	☐	☐
	Fire fighting arrangements ensured	☐	☐
	Precautions taken for blasting	☐	☐

(Contractor's Supervisor) (Contractor's Safety Officer)

Permission is granted.

(Permit issuing authority)

Name :
Date :

Completion report :

Dismantling/ Demolishing is completed on _____ Date at _____ Hrs.

Materials/ debris transported to identified location ☐ Tagging completed (as applicable) ☐

Services like power, gas supply, water, etc. restored ☐

(Permit issuing authority)

CONTRACTOR's NAME

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FORMAT NO. : HSE-10 REV 0

DAILY SAFETY CHECKLIST

(To make use of before start of day's work)

Project :
Name of the work :
Name of contractor :
Sr.No. :
Date :
Job No. :

Description of Job decided to perform : -

- **Use of PPE / Safety Gadgets**

Sl. No	PPEs	Compliance (Yes / No)	Sl. No	PPEs	Compliance (Yes / No)
1	Safety Helmets		6	Face Shield	
2	Safety Shoes		7	Full body harness	
3	Hand Gloves		8	Fall Arrest System	
4	Dust Musk		9	Safety net	
5	Safety Goggles		10	Horizontal life-line made of steel wire, (dia not less than 8.0 mm.)	

(Serial No. 1 & 2 are compulsory for everyone. Specify & ensure use of other safety gadgets as required for the job)

- **Identify following important unsafe conditions: -**

Sl. No	Conditions	Yes / No
1	Access to work site / emergency escape clear	
2	Soil / Loose earth kept away from excavated pit / slope / ladder provided	
3	Electrical wire / welding lead lying entangled on ground / welding m/c. booth accessible	
4	Elevated work platform / open ends are protected	
5	Ground area cordoned off before lifting works or erection at height / ground area checked & cordoned-off before start of height works	
6	Structural members / erected pipes / wooden boards/pieces etc. are safely anchored at heights and are not likely to fall down on people when working beneath	
7	Rope ladders tied-up on tall steel structures, long before are removed to get rid of their use	
8	Any Other	

- **Indicate actions taken, if status of any of the above items is found "No"** ……
……

- **Specific Safety guidelines / precautions, if any (**communicated thro' TBT) ……
……
……

- **Above conditions and PPE compliances are checked by undersigned and correct status are indicated after verification**

Inspected by
Contractor Engineer

Verification By
Contractor Safety Officer

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FORMAT NO. : HSE-11 REV 0

HOUSEKEEPING ASSESSMENT & COMPLIANCE

(Sheet 1 of 2)

Project :
Name of the work :
Name of contractor :
Name of contractor : Fortnightly

Sr.No. :
Date :
Job No. :

Sl No.	Subjects of Review	Satisafctory/ Yes	Non satisfactory/No	Remarks	Action
1.	Cleanliness at the Main entry / access of site				
2.	Ground condition / floor areas free from water-logging / oil spillage				
3.	Ground & elevated floors free from rubbish / wastes / accumulated debris / scraps.				
4.	Manholes / openings are covered / fenced				
5.	Trenches are barricaded / walkways are in place				
6.	Drains are cleaned / not choked / not occupied by dumped materials				
7.	Sufficient CAUTION boards / instructions displayed				
8.	Construction machinery are maintained & parked in orderly manner.				
9.	Movement of site people are not obstructed because of dumping / storing of construction materials				
10.	Access / egress to Electrical Distribution Boards / Panels clear from wires / cables / earth-strips etc.				
11.	Electrical panel rooms / sheds / MCC / Control rooms / Substations etc. are clean & tidy and not used for storing dress / clothes, tiffin-box or bicycles.				
12.	Passage behind Elec. panels are free for access				
13.	Fire extinguishers / fire-buckets are accessible without any difficulty.				
14.	Stair-steps, platforms & landings are clear & tidy				
15.	Sheds / rooms & work areas have got sufficient illumination as well as ventilation				
16.	Cables / Wires / welding leads are routed / hanged appropriately & are not creating unsafe condition.				
17.	Stacking / storing of insulation materials or their packing.				
18.	Removal or cleanliness of left-over sand, concrete, brick-bats, insulation-materials, excess earth, wastes etc.				
19.	Storing / stacking of sand, metal chips, re-bars, steel pipes, valves, fittings etc.				
20.	One escape route at ground & minimum two escape routes at elevation available,				

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FORMAT NO. : HSE-11 REV 0

(Sheet 2 of 2)

Sl No.	Subjects of Review	Satisafctory/ Yes	Non satisfactory/No	Remarks	Action
21.	Captions / Posters / Slogans on various safety instructions are displayed legibly in local language				
22.	Cable trenches are water-free or regular arrangement for taking out accumulated water exists.				
23.	Windows of rooms / offices are regularly cleaned				
24.	Facilities for cycle sheds, drinking water, washing, rest-rooms etc. are maintained in tidy manner.				
25.	Toilet, Urinals, Canteen / kitchen / pantry etc. are maintained & free from obnoxious smell.				
26.	Construction tools / tackles are stored systematically - the items are tagged / tested / certified by competent third party.				
27.	Sufficient numbers of Dust-bins / Waste-bins found at site and are regularly emptied.				

Additional remarks, if any -
……
……
……

Inspected by
Contractor Engineer

Verification By
Contractor Safety Officer

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FORMAT NO. : HSE-12 REV 0

INSPECTION OF TEMPORARY ELECTRICAL BOOTH / INSTALLATION

Project :
Name of the work :
Name of contractor :
Sub Station No:/Booth No

Sr.No. :
Date :
Job No. :
Location:

SL NO	SUBJECTS	OBSERVATION (YES /NO)	ACTION TAKEN
1	Switchboards installed properly are in order and protected from rain & water-logging.		
2	Adequate illumination provided for switchboard operation during night hours & the lamps are protected from direct human contact.		
3	Voltage ratings, DANGER signs, Shock-Treatment-Chart displayed in the installation / booth		
4	Fire extinguisher (DCP or CO_2) & Sand Bucket kept in close vicinity of Switchboards		
5	Valid License & Competent Electrician / Wireman available & name/ license no. displayed at booth / installation.		
6	General housekeeping in & around booth / installation found in order.		
7	Cable-route-markers for U/G cables provided.		
8	Monthly inspection report of Electrical hand tools available in booth / installation.		
9	Insulated Mat provided in front of Elec. Panels.		
10	Rubber hand gloves available/ used by Electricians		
11	Availability of CAUTION boards for shutdown & / or repairing works.		
12	All incoming & outgoing feeders have proper MCCB / HRC fuses / Switches.		
13	Switchboards "earthed" at two distinctly isolated locations.		
14	Switchboards have adequate operating space at the front face & at the rear face too.		
15	All connections provided through 30mA ELCB.		
16	Testing records of all ELCBs available at site		
17	Only industrial type plugs & sockets are used.		
18	Temporary connections are 3-core double insulated & free from cuts & joints and 3rd core is earthed at both ends		
19	Socket boards are properly mounted on stand & protected from water ingress.		
20	Electrical equipments operating above 250V have two earthing / double earthing.		
21	All incoming / outgoing cables are properly glanded & terminated with "lugs".		
22	Switch-boards are of industrial variety / type.		
23	Sketch for installation / connection (SLD) made & pasted & other safety labels/display boards		
24	Labeling of incoming / outgoing feeders made.		
25	All hand lamps are protected from direct contact.		
26	All electrical cable / joints are in safe condition		

Inspected by
Contractor Engineer

Verification By
Contractor Safety Officer

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FORMAT NO. : HSE-13 REV 0

INSPECTION FOR SCAFFOLDING

(Sheet 1 of 2)

Project :
Name of the work :
Name of contractor :

Sr.No. :
Date :
Job No. :

Sl. No	Description	Yes	No	N.A	Actions taken
1	Whether work permit is obtained to take up work at height above 1.5 Mts?				
2	Whether atmospheric condition is "stormy" or "raining" and works at heights have been permitted?				
3	Whether steel pipes scaffoldings are used for units /off-site areas?				
4	Whether scaffolding has been erected on rigid/firm/leveled surfaces / ground? Whether "foot-seals" or "base-plates" are used beneath the up-rights (vertical steel pipes)				
5	Whether scaffold construction is as per IS specification with toe-board and hand-rails (top-rail as well as mid-rail)?				
6	Whether distance between two successive up-rights are less than 2.5 Mts (height of scaffold & load carrying capacity governs the distance between two uprights)				
7	Whether all uprights are extended at least 900 mm above the top most working platform (to enable fitting of handrails)?				
8	Whether vertical distance of two successive ledgers is satisfactory? (*varying between 1.3 Mts. To 2.1 Mts)*				
9	Whether the peripheral areas of working at height are cordoned-off? (for avoiding accident to people arising out of dropped / deflected materials)				
10	Whether platform is provided? Is it safely approachable?				
11	Whether end of scaffold platform / board are extended beyond transoms? (125mm to 150 mm)				
12	Whether CE / IS approved quality and worthy conditioned full-body safety harness (with double lanyard & karabiners) are used while working at heights?				
13	Whether life-line of safety harness is anchored to an independent secured support capable of withstanding load of a falling person?				
14	Whether the area around the scaffold is cordoned off to prohibit the entry of unauthorized person / vehicle?				
15	Whether clamps used are of good condition, of adequate strength and free from defects?				
16	Whether ladder is placed at secured and leveled surface?				
17	Whether water-pass and oil-spills are avoided around the scaffold structure?				
18	Whether ladder is extended 1.5mts. above the landing point at height?				
19	Whether more than one access/egress provided to the scaffold?				
20	Whether ladder used are of adequate length and overlapping of short ladders avoided?				
21	Whether metallic ladders are placed much away from near-by electrical transmission line?				
22	Whether rungs of ladder are inspected and found in good order?				
23	Whether fall-arresters provided on both the access/egress routes?				
24	Whether diagonal (cross) bracings are provided at regular interval on the scaffold?				
25	Whether working platform on the scaffold has been made free from "jolt" or "gap"?				
26	Whether tools or materials are removed after completion of the day's job at heights?				
27	Whether a valid Permit for Work (PFW) is obtained before taking up work over asbestos or fragile roof?				
28	Whether sufficient precaution is taken while working on fragile roof?				

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(Sheet 2 of 2)

Sl. No	Description	Yes	No	N.A	Actions taken
29	Whether provision is made to arrange duck ladder, crawling board for working on fragile roof?				
30	Whether scaffold has been inspected by qualified civil engineers prior to their use?				
31	Whether the scaffolding has been designed for the load to be borne by the same?				
32	Whether the erection and dismantling of the scaffolding is being done by trained persons and under adequate supervision?				
33	Whether safety net with proper working arrangement and life-line has been provided?				
34	Whether TAGS (Green for acceptable and Red for incomplete/unsafe scaffolds) are used on scaffolds?				
35	Whether sufficient illumination is provided in and around the scaffold and access?				
36	Whether emergency rescue / response arrangements are made in place				

Inspected by
Contractor Engineer

Verification By
Contractor Safety Officer

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FORMAT NO . : HSE-14 REV 0

PERMIT FOR ERECTION / MODIFICATION & DISMANTLING OF SCAFFOLDING

(Sheet 1 of 2)

Project :
Name of the work :
Name of contractor :
Nature of activities :

Sr.No. :
Date :
Job No. :
Duration: From……To……

Sl. No.	Subjects / Items	Done	Not Done	Remarks
1	Specific task of Erection / Modification / Dismantling of scaffolds, identified & TAGGED accordingly (before as well as after carrying-out jobs).			
2	People engaged in doing the job are identified & are certified by Job Engineer of Main Contractor as experienced / trained.			Names to be noted
3	Concerned persons are alerted by the Job Engineer of Main Contractor in connection with possible hazards & what the workmen MUST do / MUST not do.			
4	Verification by Job Engineer of Main Contractor made for confirming that all persons permitted to carry-out the jobs are making use of Helmet, Safety Shoes, Goggles, Gloves & Double lanyard safety harness and other relevant PPEs.			
5	Area of work is effectively cordoned-off / barricaded / illuminated.			
6	For taking-up / lowering down Scaffolding members / clamps / couplings etc. appropriate ropes / pulleys/ chains etc. have been arranged for use (not to throw any item) & the same have been verified as "fit for purpose".			
7	Items / members of scaffold, being lowered are removed from the area & stacked correctly.			
8	Ropes, chains, pulley blocks etc. being used for lifting or lowering scaffold items, are inspected by the Job Engineer & their certifications as well as physical conditions have been found O.K, before signing this PERMIT.			
9	Safety Net / Life-line / Fall Arresters etc. are arranged in position and Job Engineer has found working conditions favourable for activities to start.			
10	Scaffold erection or dismantling tasks are being supervised by Experienced Engineer / Competent person.			
11	Only competent & experienced people have been selected / engaged in Scaffolding erection, modification or dismantling tasks.			
12	Adequate & effective actions for traffic and movement of people around the cordoned-off area taken to avoid inadvertent incident			
13	Working platforms are protected with handrails & toe-boards.			
14	Access & Exit (for reach & escape) are safe for use by people.			
15	Tools, tackles to be used for above jobs are verified by job Engineers of Main contractor as genuinely good and tied-up at height (to prevent their fall).			
16	Site important Telephone Nos. are made known to everyone			
17	SOP (Safe Operating Procedure) for the specific task is made & followed too.			
18	Emergency vehicle has been arranged at work locations.			

- This permit for work shall be available at specific work location all the time.
- After completion of work, permit shall be returned to safety cell of main contractor, without fail.
- This Permit shall be issued maximum upto (Monday to Sunday).
- Additional Precautions, if any

  ……

- **ACCORD OF PERMISSION** (to be ticked) - **YES** ( ) / NO ( )

Inspected by
Contractor Engineer

Verification By
Contractor Safety Officer

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FORMAT NO. : HSE-14 REV 0

(Sheet 2of 2)

Everyday Site working conditions & performance of workmen shall be assessed / checked by Contractor Site Engr. and Safety Officer shall verify the same .

	Name / sign.	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Site Engr.								
Safety Off.								

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FORMAT NO. : HSE-15 REV 0

PERMIT FOR HEAVY LIFT/CRITICAL ERECTION

Project :
Name of the work :
Name of contractor :
Nature of activities :
Location of work :
Equipment/Structure to be erected:

Sr.No. :
Date :
Job No. :
Duration: From……To……
Name /Type of crane :
Wt. of equipment/ structure to be erected :

SL. NO.	Description of Item	Compliance Status			Remarks
		Yes	No	Not applicable	
1)	Is the crane type suitable for lift or as per erection procedure?				
2)	Is the crane have the correct number of counterweights fitted?				
3)	Availability of Load Certification of crane from authorized agency.				
4)	Is the load chart of crane available in carne cabin/or with Crane operator?				
5)	Is the device to check the Wind speed in crane is working? Is the safety features in crane are working?				
6)	Availability of Load certification of slings and other accessories from authorized agency				
7)	Availability of Licensee/certificate for crane operator from authorized agency.				
8)	Availability of approved JSA for the subject activities.				
9)	Availability of approved erection/rigging procedures.				
10)	Availability of temporary gratings/ platforms for critical lifting(as applicable)				
11)	Tool Box conducted before erection?				
12)	Has the area been cordoned off?				
13)	Are the authorized persons during erection are identified?				
14)	Does each person identified for erection understand their roles and responsibilities?				
15)	Is the ground on which crane will rest or outrigger support are correct?				
16)	Is hard stand requirement (if any) complied?				
17)	Is the communication system (viz walkie talkies,etc are working properly?				
18)	If more than one crane is lifting the load, is an Intermediate rigger will supervise the lift?				
19)	If there is other obstruction within the operating radius of the crane, have correct precautions been taken to prevent collision?				
20)	All the persons are wearing the requisite PPE?				

Inspected & Issued by
Contractor Engineer/RCM

Verification By
Contractor Safety Officer

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FORMAT NO. : HSE-16 REV 0

PERMIT FOR ENERGY ISOLATION & DE-ISOLATION

Project : Sr.No. :
Name of the work : Date :
Name of contractor : Job No. :

ENERGY ISOLATION PERMIT

- Clearance required from:…..Hrs ……Date To …. ..Hrs ….Date
- Name of equipment/ energy source etc …….
- Nature of job to be done: ……..
- Area…….Location:……..

PERMIT VALIDATION	PERFORMING AUTHORITY
I hereby authorize the ……..personnel(performer) to isolate the above equipment/energy source from all sources of power and handover the equipment/energy source for maintenance/repair. Issuing authority Area –Incharge/RCM Signature: Date: Name:	The work and precautions will be carried out under my overall responsibility.(Testing/execution engineer) Signature: Date: Name:

SAFETY PRECAUTIONS FOR CLEARANCE	NORMALISING AFTER CLEARANCE
1. Notify workers of intent to de- energize ☐ 2. Obtain lock,tag or locking/tagging devices ☐ 3. Shut down ,de energize, dissipate any residual energies. ☐ 4. Apply lock ,tag and locking and/or tagging devices ☐ 5. *Any other job specific precautions ☐ 6. Verify effectiveness of lockout by attempting to restart. ☐ 7. Proper PPE is ensured ☐ I certify that the energy source mentioned above is isolated from all sources and is safe to start the work. Tag No:…… Lock No:……. Issuing authority Area –Incharge/RCM Signature: Date: Name: **(*to be included by contractor in consultation with EIL/owner)**	1. Notify workers of intent to re- energize ☐ 2. Conduct visual inspection to confirm that the danger zone is clear of workers ☐ 3. Conduct visual inspection to confirm that tools ,equipments danger zone is clear of workers ☐ 4. Reposition the safety devices(interlocks, valves, guards, covers ,sensors, as applicable, etc) ☐ 5. *Any other job specific normalizing details ☐ 6. Remove lock, tag and locking and/or tagging devices. ☐ 7. Re energize. ☐ 8. Confirm system is operating properly& safely I certify that the energy source mentioned above is isolated from all sources and is safe to start the work. Tag No:…… Lock No:……. Issuing authority Area –Incharge/RCM Signature: Date: Name: **(*to be included by contractor in consultation with EIL/owner)**

ENERGY DE-ISOLATION PERMIT

PERMIT VALIDATION	PERFORMING AUTHORITY
I hereby authorize the ……..personnel(performer) to de- isolate the above equipment/energy source from all sources of power and handover the equipment/energy source for normal operation.. Issuing authority Area –Incharge/RCM Signature: Date: Name:	I herby certify that the equipment/energy source mentioned above has been de-isolated and is ready for normal operation.(Testing/execution engineer) Signature: Date: Name: Countersigned by Issuing authority

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FORMAT NO. : HSE-17 REV 0

PERMIT FOR EXCAVATION (depth 2m and above**)**

(Sheet 1 of 2)

Project :
Name of the work :
Name of contractor :
Job Description :
Size of excavation :

Sr.No. :
Date :
Job No. :
Location:

SL. NO.	Description of Item	Compliance Status			Remarks
		Yes	No	Not applicable	
1)	Suitable and sufficient risk assessments and method statements has been carried to ensure that the work shall be undertaken in accordance with specification and standard.				
2)	Are plans/details of underground services available and the same has been reviewed?				
3)	Has survey done to locate the services/obstacles, etc.				
4)	Has the live services (electrical, water line, air line, telephone line,etc) has been disabled for carrying out the job.				
5)	Is adequate barriers/fences to protect the excavation are in place?				
6)	Is Adequate warning signs are in place?				
7)	Is Assessment of ground conditions done and remedial action (if any) taken?				
8)	Safe access / egress (e.g. ramp / steps / ladders etc.) provided for site workmen & supervisors.				
9)	Is the excavation work being undertaken in proximity of structure, etc ? If Yes, it's effect is considered?				
10)	Availability of competent person for supervising the excavation work?				
11)	Adequate safe arrangement to prevent collapse of edges (e.g. shoring / strutting / benching / sloping etc.) made at site.				
12)	Hard barricades (at least 1.0M away from edge & for excavation near site access roads) with warning signs/caution boards are provided				
13)	Accumulation / passage-ways of water at periphery of excavation / trench stopped/ restricted.				
14)	Is the equipment being used for excavation has been checked for adequacy and is in good working condition having all the safety features?				
15)	Age & fitness of workmen ensured by medical test before engagement in job ?				
16)	Arrangement of Monitoring of possible oxygen deficiency or obnoxious gases done & action taken?				

PERMIT GRANTED - Yes / No

Name & Signature of Site Engr
Contractor (Initiator)

Name & Signature of Safety Officer
Contractor (Issuing authority)

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FORMAT NO. : HSE-17 REV 0

PERMIT FOR EXCAVATION

(Sheet 2 of 2)

NOTES: -

1. Slopes or benches for excavation beyond 2.0M depth shall be designed & approved by Contractor's site head.
2. Excavated earth to be kept at least 1.5M away from edges
3. Safety helmets, Safety shoes or gum-boots, gloves, goggles, Face shield, Safety Harness shall be essential PPEs.
4. Permit shall be made in **duplicate** and original shall be available at site of work.
5. Permit shall be issued for maximum **one week** only (Monday to Sunday)
6. After completion of works, permit shall be closed & preserved for record purpose

GRANT OF PERMIT AND EXTENSIONS

Sl. No.	Validity period From ____To ____	Working Time From _____To _____	Initiator (site Engr. of Main Contractor)	Issuing authority (Safety Officer of Main Contractor)	Review by EIL / Owner (Remarks with date
1.					
2.					
3.					
4.					
5.					
6.					
7.					

Additional safety instructions if any: -

1.

2.

3.

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SAFETY PRACTICES DURING CONSTRUCTION

OISD-GDN-192

Oil Industry Safety Directorate
Government of India
Ministry of Petroleum and Natural Gas

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SAFETY PRACTICES DURING CONSTRUCTION

1.0 INTRODUCTION

Safety in Construction Management deserves utmost attention especially in the hydrocarbon industry, such as Exploration, Refineries, Pipelines and Marketing installations, Gas Processing units etc. Construction is widely recognised as one of the accident prone activities. Most of the accidents are caused by inadequate planning, failure during the construction process and/or because of design deficiencies. Besides property loss, accidents also result in injuries and fatalities to the personnel; same needs to be prevented.

The reasons for accidents during construction activities are related to unique nature of the industry, human behaviour, difficult work-site conditions, extended odd duty hours, lack of training & awareness and inadequate safety management. Unsafe working methods, equipment failure and improper housekeeping also tend to increase the accident rate in construction.

Ensuring good quality of materials, equipment and competent supervision along with compliance of standard engineering practices shall go a long way to in built safety into the system.

The objective of this standard is to provide practical guidance on technical and educational framework for safety and health in construction with a view to:

(a) prevent accidents and harmful effects on the health of workers arising from employment in construction;
(b) ensure appropriate safety during implementation of construction;
(c) provide safety practice guidelines for appropriate measures of planning, control and enforcement.

2.0 SCOPE

This document specifies broad guidelines on safe practices to be adhered to during construction activities in oil industry. However, before commencing any job, specific hazards and its effects should be assessed and necessary corrective/preventive actions should be taken by all concerned. The document is intended only to supplement and not to replace or supersede the prevailing statutory requirements, which shall also be followed as applicable. For Personal Protective Equipment, OISD-STD-155 (Part I&II) shall be referred to. The scope of this document does not include the design aspects and quality checks during construction.

3.0 DEFINITIONS

Definitions of various terminology are given below:

- *Adequate, appropriate or suitable* are used to describe qualitatively or quantitatively the means or method used to protect the worker.

- *Brace:* A structural member that holds one point in a fixed position with respect to another point; bracing is a system of structural members designed to prevent distortion of a structure.

- *By hand:* The work is done without the help of a mechanised tool.

- *Competent Authority:* A stautory agency having the power to issue regulations, orders or other instructions having the force of law.

- *Competent person:* A person possessing adequate qualifications, such as suitable training and sufficient knowledge, experience and skill for the safe performance of the specific work. The competent authorities may define appropriate criteria for the designation of such persons and may determine the duties to be assigned to them.

- *Execution agency:*

  Any physical or legal person, having contractual obligation with the owner, and who employs one or more workers on a construction site

- *Owner:*

  Any physical or legal person for whom construction job is carried out.

  It shall also include owner's designated representative/consultant/nominee/agent , authorised from time to time to act for and on its behalf, for supervising/

coordinating the activities of the execution agency.

- *Hazard:* Danger or potential danger.
- *Guard-rail:* An adequately secured rail erected along an exposed edge to prevent persons from falling.
- *Hoist:* A machine, which lifts materials or persons by means of a platform, which runs on guides.
- *Lifting gear:* Any gear or tackle by means of which a load can be attached to a lifting appliance but which does not form an integral part of the appliance or load.
- *Lifting appliance:* Any stationary or mobile appliance used for raising or lowering persons or loads.
- *Means of access or egress:* Passageways, corridors, stairs, platforms, ladders and any other means for entering or leaving the workplace or for escaping in case of danger.
- *Scaffold:* Any fixed, suspended or mobile temporary structure supporting workers and material or to gain access to any such structure and which is not a lifting appliance as defined above.
- *Toe-board:* A barrier placed along the edge of a scaffold platform, runway, etc., and secured there to guard against the slipping of persons or the falling of material.
- *Worker:* Any person engaged in construction activity.
- *Workplace:* All places where workers need to be or to go by reason of their work.

4.0 GENERAL DUTIES

4.1 GENERAL DUTIES OF EXECUTION AGENCIES

4.1.1 Execution agency should:

i) provide means and organisation to comply with the safety and health measures required at the workplace.

ii) provide and maintain workplaces, plant, equipment, tools and machinery and organise construction work so that, there is no risk of accident or injury to health of workers. In particular, construction work should be planned, prepared and undertaken so that:

(a) dangers, liable to arise at the workplace, are prevented;
(b) excessively or unnecessarily strenuous work positions and movements are avoided;
(c) organisation of work takes into account the safety and health of workers;
(d) materials and products used are suitable from a safety and health point of view;
(e) working methods are adopted to safeguard workers against the harmful effects of chemical, physical and biological agents.

iii) establish committees with representatives of workers and management or make other arrangement for the participation of workers in ensuring safe working conditions.

iv) arrange for periodic safety inspections by competent persons of all buildings, plant, equipment, tools, machinery, workplaces and review of systems of work, regulations, standards or codes of practice. The competent person should examine and ascertain the safety of construction machinery and equipment.

v) provide such supervision to ensure that workers perform their work with due regard to safety and health of theirs as well as that of others.

vi) Employ only those workers who are qualified, trained and suited by their age, physique, state of health and skill.

vii) satisfy themselves that all workers are informed and instructed in the hazards connected with their work and environment and trained in the precautions necessary to avoid accidents and injury to health.

viii) Ensure that buildings, plant, equipment, tools, machinery or workplaces in which a dangerous defect has been found should not be used until the defect has been rectified.

ix) Organise for and remain always prepared to take immediate steps to stop the operation and evacuate workers as appropriate, where there is an imminent danger to the safety of workers.

x) establish a checking system by which it can be ascertained that all the members of a shift, including operators of mobile equipment, have returned to the camp or base at the close of work on dispersed sites and where small groups of workers operate in isolation.

xi) provide appropriate first aid, training and welfare facilities to workers as per various statutes like the Factories Act, 1948 etc. and, whenever collective measures are not feasible or are insufficient, provide and maintain personal protective equipment and clothing in line with the requirement as per OISD-STD-155 (Vol. I& II) on Personnel Protective Equipment. They should also provide access to workers to occupational health services.

xii) Educate workers about their right and the duty at any workplace to participate in ensuring safe working conditions to the extent of their control over the equipment and methods of work and to express views on working procedures adopted as may affect safety and health.

xiii) Ensure that except in an emergency, workers, unless duly authorised, should not interfere with, remove, alter or displace any safety device or other appliance furnished for their protection or the protection of others, or interfere with any method or process adopted with a view to avoiding accidents and injury to health.

xiv) Ensure that workers do not operate or interfere with plant and equipment that they have not been duly authorised to operate, maintain or use.

xv) Ensure that workers do not sleep, rest or cook etc in dangerous places such as scaffolds, railway tracks, garages, confined spaces or in the vicinity of fires, dangerous or toxic substances, running machines or vehicles and heavy equipment etc.

xvii) Obtain the necessary clearance/permits as required and specified by owner

xviii) As per the Govt. circular as amended from time to time all contractors who employ more than 50 workers or where the contract value exceeds Rs. 50 crores, the following facilities are to be provided by contractor at site :

- Arrangement for drinking water
- Toilet facilities
- A creche where 10 or more women workers are having children below the age of 6 years
- Transport arrangement for attending to emergencies

xix) should deploy a safety officer at site

4.2 GENERAL DUTIES OF OWNERS

4.2.1 Owners should:

i) co-ordinate or nominate a competent person to co-ordinate all activities relating to safety and health on their construction projects;

ii) inform all contractors on the project of special risks to health and safety;

iii) Ensure that executing agency is aware of the owner's requirements and the executing agency's responsibilities with respect to safetry practices before starting the job.

5.0 SAFETY PRACTICES AT WORK PLACES

5.1. GENERAL PROVISIONS

5.1.1 All openings and other areas likely to pose danger to workers should be clearly indicated.

5.1.2 Workers & Supervisors should use the safety helmet and other requisite Personal Protective Equipment according to job & site requirement. They should be trained to use personal protective equipment.

5.1.3 Never use solvents, alkalis and other oils to clean the skin.

5.1.4 Lift the load with back straight and knees bent as far as possible. Seek the help in case of heavy load.

5.1.5 Ensure the usage of correct and tested tools and tackles. Don't allow the make shift tools and tackles.

5.1.6 No loose clothing should be allowed while working near rotating equipment or working at heights.

5.2 MEANS OF ACCESS AND EGRESS

Adequate and safe means of access (atleast two, differently located) to and egress from all workplaces should be provided. Same should be displayed and maintained.

5.3 HOUSEKEEPING

5.3.1 Ensure:

i) proper storage of materials and equipment;
ii) removal of scrap, inflammable material, waste and debris at appropriate intervals.

5.3.2 Removal of loose materials, which are not required for use, to be ensured. Accumulation of these at the site can obstruct means of access to and egress from workplaces and passageways.

5.3.3 Workplaces and passageways, that are slippery owing to oil, grease or other causes, should be cleaned up or strewn with sand, sawdust, ash etc.

5.4 PRECAUTIONS AGAINST THE FALL OF MATERIALS & PERSONS AND COLLAPSE OF STRUCTURES

5.4.1 Precautions should be taken such as the provision of fencing, look-out men or barriers to protect any person against injury by the fall of materials, or tools or equipment being raised or lowered.

5.4.2 Where necessary to prevent danger, guys, stays or supports should be used or other effective precautions should be taken to prevent the collapse of structures or parts of structures that are being erected, maintained, repaired, dismantled or demolished.

5.4.3 All openings through which workers are liable to fall should be kept effectively covered or fenced and displayed prominently.

5.4.4 As far as practicable, guardrails and toe-boards should be provided to protect workers from falling from elevated workplaces.

5.5 PREVENTION OF UNAUTHORISED ENTRY

5.5.1 Construction sites located in built-up areas and alongside vehicular and pedestrian traffic routes should be fenced to prevent the entry of unauthorised persons.

5.5.2 Visitors should not be allowed access to construction sites unless accompanied by or authorised by a competent person and provided with the appropriate protective equipment.

5.6 FIRE PREVENTION AND FIRE FIGHTING

5.6.1 All necessary measures should be taken by the executing agency and owner to:

i) avoid the risk of fire;
ii) control quickly and efficiently any outbreak of fire;
iii) bring out a quick and safe evacuation of persons.
iv) Inform unit/fire station control room, where construction work is carried out within existing operating area.

5.6.2 Combustible materials such us packing materials, sawdust, greasy/oily waste and scrap wood or plastics should not be allowed to accumulate in workplaces but should be kept in closed metal containers in a safe place.

5.6.3 Places where workers are employed should, if necessary to prevent the danger of fire, be provided with:

i) suitable and sufficient fire-extinguishing equipment, which should be easily visible and accessible;
ii) an adequate water supply at sufficient pressure meeting the requirements of various OISD standards.

5.6.4 To guard against danger at places having combustible material,

workers should be trained in the action to be taken in the event of fire, including the use of means of escape.

5.6.5 At sites having combustible material, suitable visual signs should be provided to indicate clearly the direction of escape in case of fire.

5.6.6 Means of escape should be kept clear at all times. Escape routes should be frequently inspected particularly in high structures and where access is restricted.

5.7 LIGHTING

5.7.1 Where natural lighting is not adequate, working light fittings or portable hand-lamps should be provided at workplace on the construction site where a worker will do a job.

5.7.2 Emergency lighting should be provided for personnel safety during night time to facilitate standby lighting source, if normal system fails.

5.7.2 Artificial lighting should not produce glare or disturbing shadows.

5.7.3 Lamps should be protected by guards against accidental breakage.

5.7.4 The cables of portable electrical lighting equipment should be of adequate size & characteristics for the power requirements and of adequate mechanical strength to withstand severe conditions in construction operations.

5.8 PLANT, MACHINERY, EQUIPMENT AND HAND TOOLS

5.8.1 General Provisions

i) Plant, machinery and equipment including hand tools, both manual and power driven, should:

a) be of proper design and construction, taking into account health, Safety and ergonomic principles.

b) be maintained in good working order;

c) be used only for work for which they have been designed.

d) be operated only by workers who have been authorised and given appropriate training.

e) be provided with protective guards, shields or other devices as required.

ii) Adequate instructions for safe use should be provided.

iii) Safe operating procedures should be established and used for all plant, machinery and equipment.

iv) Operators of plant, machinery and equipment should not be distracted while work is in progress.

v) Plant, machinery and equipment should be switched off when not in use and isolated before any adjustment, clearing or maintenance is done.

vi) Where trailing cables or hose pipes are used they should be kept as short as practicable and not allowed to create a hazard.

vii) All moving parts of machinery and equipment should be enclosed or adequately guarded.

viii) Every power-driven machine and equipment should be provided with adequate means, immediately accessible and readily identifiable to the operator, of stopping it quickly and preventing it from being started again inadvertently.

ix) Operators of plant, machinery, equipment and tools should be provided with PPEs, including where necessary, suitable ear protection.

5.8.2 Hand tools

i) Hand tools should be repaired by competent persons.

ii) Heads of hammers and other shock tools should be dressed or ground to a suitable radius on the edge as soon as they begin to mushroom or crack.

iii) When not in use and while being carried or transported sharp tools should be kept in sheaths, shields, chests or other suitable containers.

iv) Only insulated or nonconducting tools should be used on or near live electrical installations.

v) Only non-sparking tools should be used near or in the presence of flammable or explosive dusts or vapours.

5.8.3 Pneumatic Tools

i) Operating triggers on portable pneumatic tools should be:
   a) so placed as to minimise the risk of accidental starting of the machine.
   b) so arranged as to close the air inlet valve automatically when the pressure of the operator's hand is removed.

ii) Hose and hose connections for compressed air supply to portable pneumatic tools should be:
   a) designed and tested for the pressure and service for which they are intended;
   b) fastened securely on the pipe outlet and equipped with the safety chain, as appropriate.

iii) Pneumatic shock tools should be equipped with safety clips or retainers to prevent dies and tools from being accidentally expelled from the barrel.

iv) Pneumatic tools should be disconnected from power and the pressure in hose lines released before any adjustment or repair is made.

5.8.4 Electrical Tools

i) Low voltage portable electrical tools should generally be used.

ii) All electrical tools should be earthed, unless they are "all insulated" or "double insulated" tools which do not require earthing.

iii) All electrical tools should get inspected and maintained on a regular basis by a competent electrician and complete records kept.

5.8.5 Engines

i) Engines should:
   a) be installed so that they can be started safely and the maximum safe speed cannot be exceeded.
   b) have controls for limiting speed.
   c) have devices to stop them from a safe place in an emergency.

ii) IC engines should not be run in confined spaces unless adequate exhaust ventilation is provided.

iii) When IC engines are being fuelled:
   a) the engine should be shut off.
   b) care should be taken to avoid spilling fuel;
   c) no person should smoke or have an naked light in the vicinity.
   d) a fire extinguisher should be kept readily available.

iv) Secondary fuel reservoir should be placed outside the engine room.

6.0 CONSTRUCTION ACTIVITIES

The various common activities in construction are as under:

- Excavation
- Scaffolding, Platforms & Ladders
- Structural Work, Laying of Reinforcement & Concreting
- Road Work (Laying of roads)
- Cutting /Welding
- Working in Confined Space
- Proof/Pressure Testing
- Working at Heights
- Handling & Lifting Equipments
- Vehicle Movement
- Electrical
- Offshore
- Demolition
- Radiography
- Sand/shot blasting/ spray painting
- Work above water

The safe practices to be followed during the implementation of above construction activities are given below:

6.1 EXCAVATION

6.1.1 All excavation work should be planned and the method of excavation and the type of support

work required should be decided considering the following:

i) the stability of the ground;
ii) the excavation will not affect adjoining buildings, structures or roadways;
iii) to prevent hazard, the gas, water, electrical and other public utilities should be shut off or disconnected, if necessary;
iv) presence of underground pipes, cable conductors, etc.,
v) the position of culvert/bridges, temporary roads and spoil heaps should be determined;

6.1.2 Before digging begins on site, all excavation work should be planned and the method of excavation and the type of support work required decided.

6.1.3 All excavation work should be supervised.

6.1.4 Sites of excavations should be thoroughly inspected:

i) daily, prior to each shift and after interruption in work of more than one day;
ii) after every blasting operation;
iii) after an unexpected fall of ground;
iv) after substantial damage to supports;
v) after a heavy rain, frost or snow;
vi) when boulder formations are encountered.

6.1.5 Safe angle of repose while excavating trenches exceeding 1.5m depth upto 3.0m should be maintained. Based on site conditions, provide proper slope, usually 45^0,and suitable bench of 0.5m width at every 1.5m depth of excavation in all soils except hard rock or provide proper shoring and strutting to prevent cave-in or slides.

6.1.6 As far as possible, excavated earth should not be placed within one meter of the edge of the trench or depth of trench whichever is greater.

6.1.7 Don't allow vehicles to operate too close to excavated area. Maintain atleast 2m distance from edge of excavation. No load, plant or equipment should be placed or moved near the edge of any excavation where it is likely to cause its collapse and thereby endanger any person unless precautions such as the provision of shoring or piling are taken to prevent the sides from collapsing.

6.1.8 Adequately anchored stop blocks and barriers should be provided to prevent vehicles being driven into the excavation. Heavy vehicles should not be allowed near the excavation unless the support work has been specially designed to permit it.

6.1.9 If an excavation is likely to affect the security of a structure on which persons are working, precautions should be taken to protect the structure from collapse.

6.1.10 Barricade at 1m height (with red & white band/self glowing caution board) should be provided for excavations beyond 1.5m depth. Provide two entries/exits for such excavation.

6.1.11 Necessary precautions should be taken for underground utility lines like cables, sewers etc. and necessary approvals/clearances from the concerned authorities shall be obtained before commencement of the excavation job.

6.1.12 Water shall be pumped/bailed out, if any accumulates in the trench. Necessary precautions should be taken to prevent entry of surface water in trenches.

6.1.13 During rains, the soil becomes loose. Take additional precaution against collapse of side wall.

6.1.14 In hazardous areas, air should be tested to ascertain its quality. No one should be allowed entry till it is suitable for breathing.

6.1.15 In case of mechanised excavation, precaution shall be taken to not to allow anybody to come within one meter of extreme reach of the mechanical shovel. The mechanised excavator shall be operated by a well-trained experienced operator. When not in operation, the machine shall be kept on firm leveled ground with mechanical shovel resting on ground. Wheel or belt shall be suitably jammed to prevent any accidental movement of the

machine. Suitable precautions as per manufacturer guidelines should be taken for dozers, graders and other heavy machines.

6.1.16 In case of blasting, follow strictly IS:4081-1986 & Indian Explosive Act and rules for storage, handling and carrying of explosive materials and execution of blasting operation.

6.2 SCAFFOLDING, PLATFORMS & LADDERS

6.2.1 Metal as material of construction

i) A scaffold should be provided and maintained or other equally safe and suitable provision should be made where work cannot safely be done on or from the ground or from part of a building or other permanent structure.

ii) Scaffolds should be provided with safe means of access, such as stairs, ladders or ramps. Ladders should be secured against inadvertent movement.

iii) Every scaffold should be constructed, erected and maintained so as to prevent collapse or accidental displacement when in use.

iv) Every scaffold and part thereof should be constructed :

(a) in such a way so as not to cause hazards for workers during erection and dismantling;
(b) in such a way so as guard rails and other protective devices, platforms, ladders, stairs or ramps can be easily put together;
(c) with sound material and of requisite size and strength for the purpose for which it is to be used and maintained in a proper condition.

v) Boards and planks used for scaffolds should be protected against splitting.

vi) Materials used in the construction of scaffolds should be stored under good conditions and apart from any material unsuitable for scaffolds.

vii) Couplers should not cause deformation in tubes. Couplers should be made of drop forged steel or equivalent material.

viii) Tubes should be free from cracks, splits and excessive corrosion and be straight to the eye, and tube ends cut cleanly square with the tube axis.

ix) Scaffolds should be designed for their maximum load as per relevant code.

x) Scaffolds should be adequately braced.

xi) Scaffolds which are not designed to be independent should be rigidly connected to the building at designated vertical and horizontal places.

xii) A scaffold should never extend above the highest anchorage to an extent which might endanger its stability and strength.

xiii) Loose bricks, drainpipes, chimney-pots or other unsuitable material should not be used for the construction or support of any part of a scaffold.

xiv) Scaffolds should be inspected and certified:

(a) before being taken into use;
(b) at periodic intervals thereafter as prescribed for different types of scaffolds;
(c) after any alteration, interruption in use, exposure to weather or seismic conditions or any other occurrence likely to have affected their strength or stability.

xv) Inspection should more particularly ascertain that:

(a) the scaffold is of suitable type and adequate for the job;
(b) materials used in its construction are sound and of sufficient strength;
(c) it is of sound construction and stable;
(d) that the required safeguards are in position.

xvi) A scaffold should not be erected, substantially altered or dismantled except by or under the supervision.

xvii) Every scaffold should be maintained in good and proper condition, and every part should be kept fixed or secured so that no part can be

displaced in consequence of normal use.

xviii) If out-rigger scaffolding is to be used, it should be specifically designed and inspected before putting in use.

6.2.2 Lifting appliances on scaffolds

i) When a lifting appliance is to be used on a scaffold:

(a) the parts of the scaffold should be carefully inspected to determine the additional strengthening and other safety measures required;

(b) any movement of the scaffold members should be prevented;

(c) if practicable, the uprights should be rigidly connected to a solid part of the building at the place where the lifting appliance is erected.

6.2.3 Prefabricated scaffolds

i) In the case of prefabricated scaffold systems, the instructions provided by the manufacturers or suppliers should be strictly adhered to. Prefabricated scaffolds should have adequate arrangements for fixing bracing.

ii) Frames of different types should not be intermingled in a single scaffold.

iii) Scaffolding shall be erected on firm and level ground.

iv) All members of metal scaffolding shall be checked periodically to screen out defective / rusted members. All joints should be properly lubricated for easy tightening.

v) Entry to scaffolding should be restricted.

vi) Erection, alteration and removal shall be done under supervision of experienced personnel.

vii) Use of barrels, boxes, loose bricks etc., for supporting platform shall not be permitted.

viii) Each supporting member of platform shall be securely fastened and braced

ix) Where planks are butt-joined, two parallel putlogs shall be used, not more than 100mm apart, to give support to each plank.

x) Platform plank shall not project beyond its end support to a distance exceeding 4 times the thickness of plank, unless it is effectively secured to prevent tipping. Cantilever planks should be avoided.

xi) The platform edges shall be provided with 150mm high toe board to eliminate hazards of tools or other objects falling from platform.

xii) Erect ladders in the “four up-one out position”

xiii) Lash ladder securely with the structure.

xiv) Using non-slip devices, such as, rubber shoes or pointed steel ferules at the ladder foot, rubber wheels at ladder top, fixing wooden battens, cleats etc.

xv) When ladder is used for climbing over a platform, the ladder must be of sufficient length, to extend at least one meter above the platform, when erected against the platform in “four up-one out position.”

xvi) Portable ladders shall be used for heights not more than 4mt. Above 4mt flights, fixed ladders shall be provided with at least 600 mm landings at every 6mt or less.

xvii) The width of ladder shall not be less than 300mm and rungs shall be spaced not more than 300mm.

xviii) Every platform and means of access shall be kept free from obstruction.

xix) If grease, mud, gravel, mortar etc., fall on platform or scaffolds, these shall be removed immediately to avoid slippage.

xx) Workers shall not be allowed to work on scaffolds during storms or high wind. After heavy rain or storms, scaffolds shall be inspected before reuse.

xxi) Don't overload the scaffolding. Remove excess material and scrap immediately.

xxii) Dismantling of scaffolds shall be done in a pre-planned sequential manner.

6.2.4 Suspended scaffolds/boatwain's chair

i) In addition to the requirements for scaffolds in general as regards soundness, stability and protection against the risk of falls, suspended scaffolds should meet the following specific requirements.

(a) platforms should be designed and built with dimensions that are compatible with the stability of the structure as a whole, especially the length;
(b) the number or anchorage should be compatible with the dimensions of the platform;
(c) the safety of workers should be safeguarded by an extra rope having a point of attachment independent of the anchorage arrangements of the scaffold;
(d) the anchorage and other elements of support of the scaffold should be designed and built in such a way as to ensure sufficient strength;
(e) the ropes, winches, pulleys or pulley blocks should be designed, assembled, used and maintained according to the requirements established for lifting gear adapted to the lifting of persons according to national laws and regulations;
(f) Before use, the whole structure should be checked by a competent person.

6.2.5 Bamboo Scaffolding

i) In general, it should be avoided as far as possible. It should not be used in the unit/off-site areas and where hot work is to be done.

ii) For construction and maintenance of residential and office buildings, situated outside explosive licensed area, bamboo scaffold, if used, should conform to provisions given in IS-3696 (Part 1)-1987.

6.3 STRUCTURAL WORK, LAYING OF REINFORCEMENT & CONCRETING

6.3.1 General provisions

i) The erection or dismantling of buildings, structures, civil engineering works, formwork, falsework and shoring should be carried out by trained workers only under the supervision of a competent person.

ii) Precautions should be taken to guard against danger to workers arising from any temporary state of weakness or instability of a structure.

iii) Formwork, falsework and shoring should be so designed, constructed and maintained that it will safely support all loads that may be imposed on it.

iv) Formwork should be so designed and erected that working platforms, means of access, bracing and means of handling and stabilising are easily fixed to the formwork structure.

6.3.2. Erection and dismantling of steel and prefabricated structures

i) The safety of workers employed on the erection and dismantling of steel and prefabricated structures should be ensured by appropriate means, such as provision and use of:

(a) ladders, gangways or fixed platforms;
(b) platforms, buckets, boatswain's chairs or other appropriate means suspended from lifting appliances;
(c) safety harnesses and lifelines, catch nets or catch platforms;
(d) Power-operated mobile working platforms.

ii) Steel and prefabricated structures should be so designed and made that they can be safely transported and erected.

iii) In addition to the need for the stability of the part when erected, the design should explicitly take following into account:

(a) the conditions and methods of attachment in the operations of transport, storing and temporary support during erection or dismantling as applicable;
(b) Methods for the provision of safeguards such as railings and working platforms, and, when necessary, for mounting them

easily on the structural steel or prefabricated parts.

iv) The hooks and other devices built in or provided on the structural steel or prefabricated parts that are required for lifting and transporting them should be so shaped, dimensioned and positioned as:

(a) to withstand with a sufficient margin the stresses to which they are subjected;
(b) Not to set up stresses in the part that could cause failures, or stresses in the structure itself not provided for in the plans, and be designed to permit easy release from the lifting appliance. Lifting points for floor and staircase units should be located (recessed if necessary) so that they do not protrude above the surface;
(c) To avoid imbalance or distortion of the lifted load.

v) Storeplaces should be so constructed that:

(a) there is no risk of structural steel or prefabricated parts falling or overturning;
(b) storage conditions generally ensure stability and avoid damage having regard to the method of storage and atmospheric conditions;
(c) racks are set on firm ground and designed so that units cannot move accidentally.

vi) While they are being stored, transported, raised or set down, structural steel or prefabricated parts should not be subjected to stresses prejudicial to their stability.

vii) Every lifting appliance should:

(a) be suitable for the operations and not be capable of accidental disconnection;
(b) be approved or tested as per statutory requirement.

viii) Lifting hooks should be of the self-closing type or of a safety type and should have the maximum permissible load marked on them.

ix) Tongs, clamps and other appliances for lifting structural steel and prefabricated parts should:

(a) be of such shape and dimensions as to ensure a secure grip without damaging the part;
(b) be marked with the maximum permissible load in the most unfavourable lifting conditions.

x) Structural steel or prefabricated parts should be lifted by methods or appliances that prevent them from spinning accidentally.

xi) When necessary to prevent danger, before they are raised from the ground, structural steel or prefabricated parts should be provided with safety devices such as railings and working platforms to prevent falls of persons.

xii) While structural steel or prefabricated parts are being erected, the workers should be provided with appliances for guiding them as they are being lifted and set down, so as to avoid crushing of hands and to facilitate the operations. Use of such appliances should be ensured.

xiii) A raised structural steel or prefabricated part should be so secured and wall units so propped that their stability cannot be imperiled, even by external agencies such as wind and passing loads before its release from the lifting appliance.

xiv) At work places, instruction should be given to the workers on the methods, arrangements and means required for the storage, transport, lifting and erection of structural steel or prefabricated parts, and, before erection starts, a meeting of all those responsible should be held to discuss and confirm the requirements for safe erection.

xv) During transportation within the construction area, attachments such as slings and stirrups mounted on structural steel or prefabricated parts should be securely fastened to the parts.

xvi) Structural steel or prefabricated parts should be so transported that the conditions do not affect the stability of the parts or the means of transport result in jolting, vibration or stresses due to blows, or loads of material or persons.

xvii) When the method of erection does not permit the provision of other means of protection against fall of persons, the workplaces should be protected by guardrails, and if appropriate by toe-boards.

xviii) When adverse weather conditions such as snow, ice and wind or reduced visibility entail risks of accidents, the work should be carried on with particular care, or, if necessary, interrupted.

xix) Structures should not be worked on during violent storms or high winds, or when they are covered with ice or snow, or are slippery from other causes.

xx) If necessary, to prevent danger, structural steel parts should be equipped with attachments for suspended scaffolds, lifelines or safety harnesses and other means of protection.

xxi) The risks of falling, to which workers moving on high or sloping girders are exposed, should be limited by all means of adequate collective protection or, where this is impossible, by the use of a safety harness that is well secured to a strong support.

xxii) Structural steel parts that are to be erected at a great height should as far as practicable be assembled on the ground.

xxiii) When structural steel or prefabricated parts are being erected, a sufficiently extended area underneath the workplace should be barricaded or guarded

xxiv) Steel trusses that are being erected should be adequately shored, braced or guyed until they are permanently secured in position.

xxv) Load-bearing structural member should not be dangerously weakened by cutting, holing or other means.

xxvi) Structural members should not be forced into place by the hoisting machine while any worker is in such a position that he could be injured by the operation.

xxvii) Open-web steel joists that are hoisted singly should be directly placed in position and secured against dislodgment.

6.3.3 Reinforcement

i) Ensure that workers use Personnel Protective equipment like safety helmet, safety shoes, gloves etc.

ii) Don't place the hand below the rods for checking clear distance. Use measuring devices.

iii) Don't wear loose clothes while checking the rods.

iv) Don't stand unnecessarily on cantilever rods.

v) To carry out welding/cutting of rods, safety procedures/precautions as mentioned in Item No. 6.5 to be followed.

vi) For supplying of rods at heights, proper staging and/or bundling to be provided.

vii) Ensure barricading and staging for supplying and fixing of rods at height.

viii) For short distance carrying of materials on shoulders, suitable pads to be provided.

ix) While transporting material by trucks/trailers, the rods shall not protrude in front of or by the sides of driver's cabin. In case such protrusion cannot be avoided behind the deck, then it should not extend $1/3^{rd}$ of deck length or 1.5M which ever is less and tied with red flags/lights.

6.3.4 Concreting

i) Ensure stability of shuttering work before allowing concreting.

ii) Barricade the concreting area while pouring at height/depths.

iii) Keep vibrator hoses, pumping concrete accessories in healthy conditions and mechanically locked.

iv) Pipelines in concrete pumping system shall not be attached to temporary structures such as scaffolds and formwork support as the forces and movements may effect their integrity.

v) Check safety cages & guards around moving motors/parts etc. provided in concreting mixers.

vi) Use Personal Protective Equipment like gloves, safety shoes etc. while dealing with concrete and wear respirators for dealing with cement.

vii) Earthing of electrical mixers, vibrators, etc. should be done and verified.

viii) Cleaning of rotating drums of concrete mixers shall be done from outside. Lockout devices shall be provided where workers need to enter.

ix) Where concrete mixers are driven by internal combustion engine, exhaust points shall be located away from the worker's workstation so as to eliminate their exposure to obnoxious fumes.

x) Don't allow unauthorised person to stand under the concreting area.

xi) Ensure adequate lighting arrangements for carrying out concrete work during night.

xii) Don't allow the same workers to pour concrete round the clock. Insist on shift pattern.

xiii) During pouring, shuttering and its supports should be continuously watched for defects.

6.4 ROAD WORK

6.4.1 Site shall be barricaded and provided with warning signs, including night warning lamps at appropriate locations for traffic diversion.

6.4.2 Filled and empty bitumen drums shall be stacked separately at designated places.

6.4.3 Mixing aggregate with bitumen shall preferably be done with the help of bitumen batch mixing plant, unless operationally non-feasible.

6.4.4 Road rollers, Bitumen sprayers, Pavement finishers shall be driven by experienced drivers with valid driving license.

6.4.5 Workers handling hot bitumen sprayers or spreading bitumen aggregate mix or mixing bitumen with aggregate, shall be provided with PVC hand gloves and rubber shoes with legging up to knee joints.

6.4.6 At the end of day's work, surplus hot bitumen in tar boiler shall be properly covered by a metal sheet, to prevent anything falling in it,

6.4.7 If bitumen accidentally falls on ground, it shall be immediately covered by sprinkling sand, to prevent anybody stepping on it. Then it shall be removed with the help of spade.

6.4.8 For cement concrete roads, besides site barricading and installation of warning signs for traffic diversion, safe practices mentioned in the chapter on "Concreting", shall also be applicable.

6.5 CUTTING/WELDING

6.5.1 Common hazards involved in welding/cutting are sparks, molten metal, flying particles, harmful light rays, electric shocks etc. Following precautions should be taken: -

i) A dry chemical type fire extinguisher shall be made available in the work area.

ii) Adequate ventilation shall be ensured by opening manholes and fixing a shield or forced circulation of air etc, while doing a job in confined space.

iii) Ensure that only approved and well-maintained apparatus, such as torches, manifolds, regulators or pressure reducing valves, and acetylene generators, be used.

iv) All covers and panels shall be kept in place, when operating an electric Arc welding machine.

v) The work piece should be connected directly to Power supply, and not indirectly through pipelines/structures/equipments etc.

vi) The welding receptacles shall be rated for 63 A suitable for 415V, 3-Phase system with a scraping earth. Receptacles shall have necessary mechanical interlocks and earthing facilities.

vii) All cables, including welding and ground cables, shall be checked for

any worn out or cracked insulation before starting the job. Ground cable should be separate without any loose joints.

viii) Cable coiling shall be maintained at minimum level, if not avoidable.

ix) An energised electrode shall not be left unattended.

x) The power source shall be turned off at the end of job.

xi) All gas cylinders shall be properly secured in upright position.

xii) Acetylene cylinder shall be turned and kept in such a way that the valve outlet points away from oxygen cylinder.

xiii) Acetylene cylinder key for opening valve shall be kept on valve stem, while cylinder is in use, so that the acetylene cylinder could be quickly turned off in case of emergency. Use flash back arrestors to prevent back-fire in acetylene/oxygen cylinder.

xiv) When not in use, valves of all cylinders shall be kept closed.

xv) All types of cylinders, whether full or empty, shall be stored at cool, dry place under shed.

xvi) Forced opening of any cylinder valve should not be attempted.

xvii) Lighted gas torch shall never be left unattended.

xviii) Store acetylene and oxygen cylinders separately.

xix) Store full and empty cylinders separately.

xx) Avoid cylinders coming into contact with heat.

xxi) Cylinders that are heavy or difficult to carry by hand may be rolled on their bottom edge but never dragged.

xxii) If cylinders have to be moved, be sure that the cylinder valves are shut off.

xxiii) Before changing torches, shut off the gas at the pressure reducing regulators and not by crimping the hose.

xxiv) Do not use matches to light torches, use a friction lighter.

xxv) Move out any leaking cylinder immediately.

xxvi) Use trolleys for oxygen & acetylene cylinder and chain them.

xxvii) Always use Red hose for acetylene and other fuel gases and Black for oxygen, and ensure that both are in equal length.

xxviii) Ensure that hoses are free from burns, cuts and cracks and properly clamped.

xxix) Avoid dragging hoses over sharp edges and objects

xxx) Do not wrap hoses around cylinders when in use or stored.

xxxi) Protect hoses from flying sparks, hot slag, and other hot objects.

xxxii) Lubricants shall not be used on Ox-fuel gas equipment.

xxxiii) During cutting/welding, use proper type goggles/face shields.

6.6 WORKING IN CONFINED SPACES

6.6.1 Following safety practices for working in confined space like towers, columns, tanks and other vessels should be followed in addition to the safety guidelines for specific jobs like scaffolding, cutting/welding etc.

i) Shut down, isolate, depressurise and purge the vessel as per laid down procedures.

ii) Entry inside the vessel and to carry out any job should be done after issuance of valid permit only in line with the requirement of OISD-STD-105.

iii) Ensure proper and accessible means of exit before entry inside a confined space.

iv) The number of persons allowed inside the vessel should be limited to avoid overcrowding.

v) When the work is going on in the confined space, there should always be one man standby at the nearby manway.

vi) Before entering inside the vessels underground or located at lower elevation, probability of dense vapours accumulating nearby should also be considered in addition to inside the vessel.

vii) Ensure requisite O_2 level before entry in the confined space and monitor level periodically or other wise use respiratory devices.

viii) Check for no Hydrocarbon or toxic substances before entry and monitor level periodically or use requisite Personal Protective Equipment.

ix) Ensure adequate ventilation or use respiratory devices.

x) Depending upon need, necessary respirator system, gas masks and suit shall be worn by everyone entering confined space. In case of sewer, OWS or in the confined area where there is a possibility of toxic or inert gas, gas masks shall be used by everyone while entering.

xi) Barricade the confined spaces during hoisting, radiography, blasting, pressure testing etc.

xii) Use 24V flameproof lamp fittings only for illumination.

xiii) Use tools with air motors or electric tools with maximum voltage of 24V.

xiv) House keeping shall be well maintained.

xv) Safety helmet, safety shoes and safety belt shall be worn by everyone entering the confined space.

xvi) Don't wear loose clothing while working in a confined space.

xvii) In case of the vessels which are likely to contain pyropheric substances (like Iron Sulphide), special care need to be taken before opening the vessel. Attempt should be made to remove the pyropheric substances. Otherwise, these should be always kept wet by suitable means.

xviii) The cutting torches should also be kept outside the vessel immediately after the cutting.

xix) The gas cylinders used for cutting/welding shall be kept outside.

xx) All cables, hoses, welding equipment etc., shall be removed from confined space at end of each work day, even if the work is to be resumed in the same space the next day.

xxi) To the extent possible sludge shall be cleared and removed from outside before entering.

xxii) No naked light or flame or hot work such as welding, cutting and soldering should be permitted inside a confined space or area unless it has been made completely free of the flammable atmosphere, tested and found safe by a competent person. Only non-sparking tools and flameproof hand lamps protected with guard and safety torches should be used inside such confined space or area for initial inspection, cleaning or other work required to be done for making the area safe.

xxiii) Communication should be always maintained between the worker and the attendant.

6.7 PROOF/PRESSURE TESTING

6.7.1 Review test procedure before allowing testing with water or air or any other fluid.

6.7.2 Provide relief valves of adequate size while testing with air or other gases.

6.7.3 Ensure compliance of necessary precautions, step wise loading, tightening of fasteners, grouting etc. before and during testing.

6.7.4 Inform all concerned in advance of the testing.

6.7.5 Keep the vents open before opening any valve for filling/draining of liquid used for hydrotesting. The filling/draining should not exceed the designed rate for pressure testing.

6.7.6 Provide separate gauges of suitable range for pressurising pump and the equipment to be tested.

6.7.7 Provide gauges at designated locations for monitoring of pressures.

6.7.8 Check the calibration of all pressurising equipment and accessories and maintain records.

6.7.9 Take readings at pre-defined intervals.

6.8 WORKING AT HEIGHTS

6.8.1 General Provision

i) While working at a height of more than 3 meters, ISI approved safety belt shall be used.

ii) While working at a height of more than 3 meters, permit should be issued by competent person before commencement of the job.

iii) Worker should be well trained on usage of safety belt including its proper usage at the time of ascending/descending.

iv) All tools should be carried in tool kits to avoid their falling.

v) If the job is on fragile/sloping roof, roof walk ladders shall be used.

vi) Provide lifeline wherever required.

vii) Additional safety measures like providing Fall Arrestor type Safety belt, safety net should be provided depending upon site conditions, job requirements.

viii) Keep working area neat and clean. Remove scrap material immediately.

ix) Don't throw or drop material/equipment from height.

x) Avoid jumping from one member to another. Use proper passageway.

xi) Keep both hands free while climbing. Don't try to bypass the steps of the ladder.

xii) Try to maintain calm at height. Avoid over exertion.

xiii) Avoid movements on beam.

xiv) Elevated workplaces including roofs should be provided with safe means of access and egress such as stairs, ramps or ladders.

6.8.2 Roof Work

i) All roof-work operations should be pre-planned and properly supervised.

ii) Roof work should only be undertaken by workers who are physically and psychologically fit and have the necessary knowledge and experience for such work.

iii) Work on roofs shouldn't be carried on in weather conditions that threaten the safety of workers.

iv) Crawling boards, walkways and roof ladders should be securely fastened to a firm structure.

v) Roofing brackets should fit the slope of the roof and be securely supported.

vi) Where it is necessary for a person to kneel or crouch near the edge of the roof, necessary precautions should be taken.

vii) On a large roof where work have to be carried out at or near the edge, a simple barrier consisting of crossed scaffold tubes supporting a tubing guardrail may be provided.

viii) All covers for openings in roofs should be of substantial construction and be secured in position.

ix) Roofs with a pitch of more than 10 should be treated as sloping.

x) When work is being carried out on sloping roofs, sufficient and suitable crawling boards or roof ladders should be provided and firmly secured in position.

xi) During extensive work on the roof, strong barriers or guardrails and toe-boards should be provided to stop a person from falling off the roof.

xii) Where workers are required to work on or near roofs or other places covered with fragile material, through which they are liable to fall, they should be provided with suitable roof ladders or crawling boards strong enough and when spanning across the supports for the roof covering to support those workers.

xiii) A minimum of two boards should be provided so that it is not necessary for a person to stand on a fragile roof to move a board or a ladder, or for any other reason.

6.8.3 Work on tall chimneys

i) For the erection and repair of tall chimneys, scaffolding should be provided. A safety net should be maintained at a suitable distance below the scaffold.

ii) The scaffold floor should always be at least 65 cm below the top of the chimney.

iii) Under the working floor of the scaffolding the next lower floor should be left in position as a catch platform.

iv) The distance between the inside edge of the scaffold and the wall of the chimney should not exceed 20 cm at any point.

v) Catch platforms should be erected over:

(a) the entrance to the chimney;
(b) Passageways and working places where workers could be endangered by falling objects.

vi) For climbing tall chimneys, access should be provided by:

(a) stairs or ladders;
(b) a column of iron rungs securely embedded in the chimney wall;
(c) Other appropriate means.

vii) When workers use the outside rungs to climb the chimney, a securely fastened steel core rope looped at the free end and hanging down at least 3 m should be provided at the top to help the workers to climb on to the chimney.

viii) While work is being done on independent chimneys the area surrounding the chimney should be enclosed by fencing at a safe distance.

ix) Workers employed on the construction, alteration, maintenance or repair of tall chimneys should not:

a) work on the outside without a safety harness attached by a lifeline to a rung, ring or other secure anchorage;
b) put tools between the safety harness and the body or in pockets not intended for the purpose;
c) haul heavy materials or equipment up and down by hand to or from the workplace on the chimney;
d) fasten pulleys or scaffolding to reinforcing rings without first verifying their stability;
e) work alone;
f) climb a chimney that is not provided with securely anchored ladders or rungs;
g) Work on chimneys in use unless the necessary precautions to avoid danger from smoke and gases have been taken.

x) Work on independent chimneys should not be carried on in high winds, icy conditions, fog or during electrical storms.

6.9 HANDLING AND LIFTING EQUIPMENT:

6.9.1 General Provisions

Following are the general guidelines to be followed with regard to all types of handling and lifting equipment in addition to the guidelines for specific type of equipments dealt later on.

i) There should be a well-planned safety programme to ensure that all the lifting appliances and lifting gear are selected, installed, examined, tested, maintained, operated and dismantled with a view to preventing the occurrence of any accident;

ii) All lifting appliances shall be examined by competent persons at frequencies as specified in "The Factories act".

iii) Check thoroughly quality, size and condition of all lifting tools like chain pulley blocks, slings, U-clamps, D-shackles etc. before putting them in use.

iv) Safe lifting capacity of all lifting & handling equipment, tools and shackles should be got verified and certificates obtained from competent authorities before its use. The safe working load shall be marked on them.

v) Check periodically the oil, brakes, gears, horns and tyre pressure of all moving equipments like cranes,

forklifts, trailers etc as per manufacturer's recommendations.

vi) Check the weights to be lifted and accordingly decide about the crane capacity, boom length and angle of erection.

vii) Allow lifting slings as short as possible and check packing at the friction points.

viii) While lifting/placing of the load, no unauthorised person shall remain within the radius of the boom and underneath the load.

ix) While loading, unloading and stacking of pipes, proper wedges shall be placed to prevent rolling down of the pipes.

x) Control longer jobs being lifted up from both ends.

xi) Only trained operators and riggers should carry out the job. While the crane is moving or lifting the load, the trained rigger should be there for keeping a vigil against hitting any other object.

xii) During high wind conditions and nights, lifting of heavy equipments should be avoided. If unavoidable to do erection in night, operator and rigger should be fully trained for night signaling. Also proper illumination should be there.

xiii) Allow crane to move on hard, firm and leveled ground.

xiv) When crane is in idle condition for long periods or unattended, crane boom should either be lowered or locked as per manufacturer's guidelines.

xv) Hook and load being lifted shall remain in full visibility of crane operators, while lifting, to the extent possible.

xvi) Don't allow booms or other parts of crane to come within 3 meters reach of overhead electrical cables.

xvii) No structural alterations or repairs should be made to any part of a lifting appliance, which may affect the safety of the appliance without the permission and supervision of the competent person.

6.9.2 Hoists

i) Hoist shafts should be enclosed with rigid panels or other adequate fencing at:

(a) ground level on all sides;
(b) all other levels at all points at which access is provided;
(c) all points at which persons are liable to be struck by any moving part.

ii) The enclosure of hoist shafts, except at approaches should extend where practicable at least 2mt above the floor, platform or other place to which access is provided except where a lesser height is sufficient to prevent any person falling down the hoistway and there is no risk of any person coming into contact with any moving part of the hoist, but in no case should the enclosure be less than 1mt in height.

iii) The guides of hoist platforms should offer sufficient resistance to bending and, in the case of jamming by a safety catch, to buckling.

iv) Where necessary to prevent danger, adequate covering should be provided above the top of hoist shafts to prevent material falling down them.

v) Outdoor hoist towers should be erected on firm foundations, and securely braced, guyed and anchored.

vi) A ladderway should extend from the bottom to the top of outdoor hoist towers, if no other ladderway exists within easy reach.

vii) Hoisting engines should be of ample capacity to control the heaviest load that they will have to move.

viii) Hoists should be provided with devices that stop the hoisting engine as soon as the platform reaches its highest stopping place.

ix) Winches should be so constructed that the brake is applied when the control handle is not held in the operating position.

x) It should not be possible to set in motion from the platform a hoist, which is not designed for the conveyance of persons.

xi) Winches should not be fitted with pawl and ratchet gears on which the pawl must be disengaged before the platform is lowered.

xii) Hoist platforms should be capable of supporting the maximum load that they will have to carry with a safety factor.

xiii) Hoist platforms should be equipped with safety gear that will hold the platform with the maximum load if the hoisting rope breaks.

xiv) If workers have to enter the cage or go on the platform at landings there should be a locking arrangement preventing the cage or platform from moving while any worker is in or on it.

xv) On sides not used for loading and unloading, hoist platforms should be provided with toe-boards and enclosures of wire mesh or other suitable material to prevent the fall of parts of loads.

xvi) Where necessary to prevent danger from falling objects, hoist platforms should be provided with adequate covering.

xvii) Counterweights consisting of an assemblage of several parts should be made of specially constructed parts rigidly connected together.

xviii) Counterweights should run in guides.

xix) Platforms should be provided at all landings used by workers.

xx) Following notices should be posted up conspicuously and in very legible characters:

(a) on all hoists:

- on the platform: the carrying capacity in kilograms or other appropriate standard unit of weight;
- on the hoisting engine: the lifting capacity in kilograms or other appropriate standard unit of weight;

(b) on hoists authorised or certified for the conveyance of persons:

- on the platform or cage: the maximum number of persons to be carried at one time;

(c) *on* hoists for goods only:

- on every approach to the hoist and on the platform: prohibition of use by persons.

xxi) Hoists intended for the carriage of persons should be provided with a cage so constructed as to prevent any person from falling out or being trapped between the cage and any fixed part of the structure when the cage gate is shut, or from being struck by the counterbalance weight or by articles or materials tailing down the hoistway.

xxii) On each side in which access is provided, the cage should have a gate fitted with devices which ensure that the gate cannot be opened except when the cage is at a landing and that the gate must be closed before the cage can move away from the landing.

xxiii) Every gate in the enclosure of the hoist shaft which gives access from a landing place to the cage should be fitted with devices to ensure that the gate cannot be opened except when the cage is at that landing place, and that the cage cannot be moved away from that landing place until the gate is closed.

6.9.3 Derricks

Stiff-leg derricks

i) Derricks should be erected on a firm base capable of taking the combined weight of the crane structure and maximum rated load.

ii) Devices should be used to prevent masts from lifting out of their seating.

iii) Electrically operated derricks should be effectively earthed from the sole plate or framework.

iv) Counterweights should be so arranged that they do not subject the backstays, sleepers or pivots to excessive strain.

v) When derricks are mounted on wheels:

a) a rigid member should be used to maintain the correct distance between the wheels;
b) they should be equipped with struts to prevent them from dropping if a wheel breaks or the derrick is derailed.

vi) The length of a derrick jib should not be altered without consulting the manufacturer.

vii) The jib of a scotch derrick crane should not be erected within the backstays of the crane.

Guy derricks

i) The restraint of the guy ropes should be ensured by fitting stirrups or anchor plates in concrete foundations.

ii) The mast of guy derricks should be supported by six top guys spaced approximately equally.

iii) The spread of the guys of a guy derrick crane from the mast should not be more than 45^0 from the horizontal.

iv) Guy ropes of derricks should be equipped with a stretching screw or turnbuckle or other device to regulate the tension.

v) Gudgeon pins, sheave pins and fool bearings should be lubricated frequently.

vi) When a derrick is not in use, the boom should be anchored to prevent it from swinging.

6.9.4 Gin poles

i) Gin poles should:

(a) be straight;
(b) consist of steel or other suitable metal;
(c) be adequately guyed and anchored;
(d) be vertical or raked slightly towards the load;
(e) be of adequate strength for the loads that they will be required to lift/move.

ii) Gin poles should not be spliced and if a gin pole is composed of different elements, they should be assembled in conformity with their intrinsic material strength.

iii) Gin poles should be fastened at their feet to prevent displacement in operation.

iv) Gin poles, which are moved from place to place and re-erected, should not be taken into use again before the pole, lifting ropes, guys, blocks and other parts have been inspected, and the whole appliance has been tested under load.

v) When platforms or skips are hoisted by gin poles, precautions should be taken to prevent them from spinning and to provide for proper landing.

6.9.5 Tower cranes

i) Where tower cranes have cabs at high level, persons, capable and trained to work at heights, should only be employed as crane operators.

ii) The characteristics of the various machines available should be considered against the operating requirements and the surroundings in which the crane will operate before a particular type of crane is selected.

iii) Care should be taken in the assessment of wind loads both during operations and out of service. Account should also be taken of the effects of high structures on wind forces in the vicinity of the crane.

iv) The ground on which the tower crane stands should have the requisite bearing capacity. Account should be taken of seasonal variations in ground conditions.

v) Bases for tower cranes and tracks for rail-mounted tower cranes should be firm and level. Tower cranes should only operate on gradients within limits specified by the manufacturer. Tower cranes should only be erected at a safe distance from excavations and ditches.

vi) Tower cranes should be sited where there is clear space available for erection, operation and dismantling. As far as possible, cranes should be sited so that loads do not have to be handled over occupied premises, over public thoroughfares, other construction works and railways or near power cables.

vii) Where two or more tower cranes are sited in positions where their jibs could touch any part of the other crane, there should be direct means of communication between them and a distinct warning system operated from the cab so that one driver may alert the other of impending danger.

viii) The manufacturers' instructions on the methods and sequence of erection and dismantling should be followed. The crane should be tested before being taken into use.

ix) The climbing operation of climbing tower cranes should be carried out in accordance with manufacturers' instructions. The free-standing height of the tower crane should not extend beyond what is safe and permissible in the manufacturers' instructions.

x) When the tower crane is left unattended, loads should be removed from the hook, the hook raised, the power switched off and the boom brought to the horizontal. For longer periods or at times when adverse weather conditions are expected, out of service procedures should be followed. The main jib should be slewed to the side of the tower away from the wind, put into free slew and the crane immobilised.

xi) A windspeed measuring device should be provided at an elevated position on the tower crane with the indicator fitted in the drivers' cab.

xii) Devices should be provided to prevent loads being moved to a point where the corresponding safe working load of the crane would be exceeded. Name boards or other items liable to catch the wind should not be mounted on a tower crane other than in accordance with the manufacturers' instructions.

xiii) Tower cranes should not be used for magnet, or demolition ball service, piling operations or other duties, which could impose excessive loading on the crane structure.

6.9.6 Lifting ropes

i) Only ropes with a known safe working capacity should be used as lifting ropes.

ii) Lifting ropes should be installed, maintained and inspected in accordance with manufacturers' instructions.

iii) Repaired steel ropes should not be used on hoists.

iv) Where multiple independent ropes are used, for the purpose of stability, to lift a work platform, each rope should be capable of carrying the load independently.

6.10 VEHICLE MOVEMENT

6.10.1 Park vehicles only at designated places. Don't block roads to create hindrance for other vehicles.

6.10.2 Don't overload the vehicle.

6.10.3 Obey speed limits and traffic rules.

6.10.4 Always expect the unexpected and be a defensive driver.

6.10.5 Drive carefully during adverse weather and road conditions.

6.10.6 Read the road ahead and ride to the left.

6.10.7 Be extra cautious at nights. Keep wind screens clean and lights in working condition.

6.10.8 All vehicles used for carrying workers and construction materials must undergo predictive/preventive maintenance and daily checks

6.10.9 Driver with proper valid driving license shall only be allowed to drive the vehicle

6.10.10 Routes shall be leveled, marked and planned in such a way so as to avoid potential hazards such as overhead power lines and sloping ground etc.

6.10.11 While reversing the vehicles, help of another worker should be ensured at all times

6.10.12 An unattended vehicle should have the engine switched off

6.10.13 Wherever possible one-way system shall be followed

6.10.14 Barriers/fixed stops should be provided for excavation/openings to prevent fall of vehicle

6.10.15 Load should be properly secured

6.10.16 The body of the tipper lorry should always be lowered before driving the vehicle off.

6.10.17 Signs/signals/caution boards etc. should be provided on routes .

6.11 ELECTRICAL

6.11.1 General Provisions

i) Only persons having valid licenses should be allowed to work on electrical facilities.

ii) No person should be allowed to work on live circuit. The same, if unavoidable, special care and authorisation need to be taken.

iii) Treat all circuits as "LIVE" unless ensured otherwise.

iv) Electrical "Tag Out" procedure "MUST" be followed for carrying out maintenance jobs.

v) Display voltage ratings prominently with "Danger" signs.

vi) Put caution/notice signs before starting the repair works.

vii) All electrical equipment operating above 250V shall have separate and distinct connections to earth grid.

viii) Proper grounding to be ensured for all switch boards and equipment including Portable ones prior to taking into service.

ix) Make sure that electrical switch boards, portable tools, equipments (like grinding machine etc.) don't get wet during their usage. If it happens, stop the main supply, make the tools dry and then only use them. Check proper earthing.

All temporary switch boards/ KIOSKS put up at work site should be suitably protected from rain and the level of same should be high enough to avoid contact with water due to water logging.

x) Don't work wet on electrical system.

xi) Don't overload the electrical system.

xii) Use only proper rated HRC fuses.

xiii) Industrial type extension boards and Plug sockets are only to be used.

xiv) ELCB for all temporary connections must be provided. Use insulated 3 pin plug tops.

xv) All power supply cables should be laid properly and neatly so that they don't cause hindrance to persons working and no physical damage also takes place to the cables during various construction activities.

xvi) All Power cables to be properly terminated using glands and lugs of proper size and adequately crimped.

xvii) Use spark-proof/flame proof type electrical fittings in Fire Hazard zones as per area classification under OISD-STD-113.

xviii) Check installations of steel plates/pipes to protect underground cables at crossings.

xix) Don't lay unarmored cable directly on ground, wall, roof or trees. All temporary cables should be laid at least 750 mm below ground and cable markers should be provided. Proper sleeves should be provided at road crossings. In case temporary cables are to be laid on wooden poles/steel poles, the minimum cable heights should be 4.5 M.

xx) Maintain safe overhead distance of HT cables as per Indian Electricity Rules and relevant acts.

xxi) Don't connect any earthing wire to the pipelines/structures.

xxii) Don't make any unsafe temporary connections, naked joints/wiring etc.

xxiii) Ensure that temporary cables are free from cuts, damaged insulation, kinks or improper insulated joints.

xxiv) Check at periodic intervals that pins of sockets and joints are not loose.

xxv) Protect electrical wires/equipments from water and naked flames.

xxvi) Illuminate suitably all the work areas.

xxvii) All switchboards should be of MS structure only and incoming source should be marked.

xxviii) Hand lamps should not be of more than 24V rating.

xxix) Fire extinguishers (DCP/CO_2/Sand buckets) should be kept near

temporary switch boards being used for construction purposes. Don't use water for fighting electrical fires.

xxx) Insulating mats shall be provided in the front and back end of switch boards.

xxxi) All parts of electrical installations should be so constructed, installed and maintained as to prevent danger of electric shock, fire and external explosion.

Periodic checking/certification of electrical safety appliances such as gloves, insulating mats, hoods etc. to be done/witnessed along with maintaining a register at site signed by competent authority.

xxxii) A notice displaying following, should be kept exhibited at suitable places:

a) prohibiting unauthorised persons from entering electrical equipment rooms or from handling or interfering with electrical apparatus;
b) containing directions as to procedures in case of fire, rescue of persons in contact with live conductors and the restoration of persons suffering from electric shock;
c) specifying the person to be notified in case of electrical accident or dangerous occurrence, and indicating how to communicate with him.

xxxiii) No other cables/pipes to be laid in trench used for electrical cables.

xxxiv) Utmost care should be taken while excavating Earth from cable trench to avoid damage or any accident.

xxxv) Sub-station floor cut-outs meant for switch board installations to be covered wherever installation is incomplete.

NOTE: A Residual Current Operated Circuit Breaker (RCCB) or Earth Leakage Circuit Breaker (ELCB), when installed, protects a human being to the widest extent. RCCB or ELCB should be provided as per Indian Electricity Rules.

6.11.2 Inspection and maintenance

i) All electrical equipment should be inspected before taking into use to ensure suitability for its proposed use.

ii) At the beginning of every shift, the person using the electrical equipment should make a careful external examination of the equipment and conductors, especially the flexible cables.

iii) Apart from some exceptional cases, work on or near live parts of electrical equipment should be forbidden.

iv) Before any work is begun on conductors or equipment that do not have to remain live:

a) the current should be switched off by a responsible authorised person;
b) precautions should be taken to prevent the current from being switched on again;
c) the conductors or the equipment should be tested to ascertain that they are dead;
d) the conductors and equipment should be earthed and short-circuited;
e) neighbouring live parts should be adequately protected against accidental contact.

v) After work has been done on conductors and equipment, the current should only be switched on again on the orders of a competent person after the earthing and short-circuiting have been removed and the workplace reported safe.

vi) Electricians should be provided with approved and tested tools, and personal protective equipment such as rubber gloves, mats etc.

vii) All conductors and equipment should be considered to be live unless there is a proof of the contrary.

viii) When work has to be done in dangerous proximity to live parts the current should be cut off. If for operational reasons this is not possible, the live parts should be fenced off or enclosed by qualified staff from the sub-station concerned.

6.11.3. Testing

i) Electrical installations should be inspected and tested and the results recorded.

ii) Periodic testing of the efficiency of the earth leakage protective devices should be carried out.

iii) Particular attention should be paid to the earthing of apparatus, the continuity of protective conductors, polarity and insulation resistance, protection against mechanical damage and condition of connections at points of entry.

6.12 OFFSHORE

6.12.1 General

The isolated nature of offshore installations are hazardous. They call for greater need for safety and survival at offshore. Safety at offshore is safety of installations and safety of personnel. Safety problems and accidents at offshore have high risks due to limited space, helicopter operation, sea transport etc. Following are the general safety guidelines to be followed in addition to the safety guidelines stipulated for specific jobs dealt later on:

i) Workers should be well trained to do their job independently with high degree of self-control and self-discipline.

ii) On arrival at offshore, everyone should be briefed about the safety rules to be followed at offshore, evacuation system etc. All personnel should wear overall (dangri), helmet and shoes for personnel protection.

iii) In case of emergency, workers should follow instruction of Field Production Superintendent (F.P.S.) In certain cases instructions may be given to abandon the offshore installation and evacuate the persons to safe location.

iv) To overcome above problems, offshore personnel must receive training for using life saving appliances and other personal survival techniques.

v) Any person working at offshore should have one person as standby for any eventuality.

6.12.2 Drilling Rigs

i) Location of jack up rigs should not be less than 5 Kms from shipping route. Orientation of the rig, wind direction etc are required for safe landing of helicopter. Information w.r.t. sea currents, wind speed, Hi-lo tide etc are required for mooring of supply vessels.

ii) Sea bed condition at every location should be ensured for safety of rig.

iii) Radio and other communication facilities should be such to maintain contact with base all times.

iv) During toeing of rig, the rig deck should be clear of load, toeing lines should be in good condition and tensions in various toeing lines should be constantly monitored.

v) Few steps during toeing are:

a) crane booms should be secured to their vesta,
b) all hatches and water tight doors should be closed,
c) number of personnel on board should be restricted,
d) evacuate in case of emergency and operation should be completed preferably in day light.

6.12.3 Drilling

i) In view of CO_2 and H_2S gas cut from well, effective ventilation should be provided where drilling is in progress.

ii) Safety alarm shall be checked in advance in view of failure of ventilation system.

iii) Suitable sensors for H_2S and Methane should be function tested time to time and suitable colour code should be given.

iv) Working areas of the crane should be illuminated during night to avoid accident.

v) Clear space should be available for despatch and receipt of load and, in particular, basket transfer of passengers. Persons engaged in loading/unloading of materials should be protected from falling into the sea.

vi) Signal light should be fitted at the top of the jib.

vii) Crane hook should be fitted with safety latches.

viii) Experienced person should be engaged in operation of specific equipment like winches, cranes etc.

ix) At least three cable turns shall always be there on the winch drum.

x) Adequate communication like walkie talkie, round robin phone should be available between the crane operator, supervisor and helper.

xi) Crane operation should be completely stopped during helicopter landing/taking off.

xii) Except for helicopter landing deck, all decks, platforms, bridges, ladders should have rigid and fixed guard rails atleast one meter high and should have one intermediate rail midway between the handrail and 100 mm toe board.

xiii) Wooden ladders shall not be used at offshore.

xiv) Flow sensor in the flow line should be ensured for safe working and to avoid blow out.

xv) Hydrogen sulphuide gas In offshore is of great risk and at 10 ppm (0.001%) concentration in air, a person should not be exposed for more than 8 hours, If concentration is more, then breathing apparatus should be used. Corrosion of equipment is also caused by H_2S.

xvi) Portable H_2S gas detector should be continously used.

6.12.4 Production Platforms

i) In case hydrocarbon Is released due to overpressure, leak, overflow, gas blow etc., shut down process to stop flow *of* hydrocarbon. Prevent ignition of released hydrocarbon and in case of fire shut in the process complex and follow emergency contigency plan.

ii) Sub surface safetv valve (SSSV)) below the well head should be actuated during uncontrolled well - flow and they should be regularly checked.

iii) Surface safety valve or SDV should be checked for no gas leakage from bleed port / flange etc., in the well head area. It should not be in "mechanical override" or bypassed from panel.

iv) High pressure gas lift lines - blowdown system should be O.K.

v) Auto actuation of SDVs in the inlet of pressure vessels should be O.K. and in "normal position" from shutdown panels. A record of status of switches normal/bypassed in auto-con* panels (PSH, PSL, LSL, ILSL) should be maintained.

* Shut Down Panels

vi) Welders rectifier set and electrical connections to it should be checked and approved by electrical-in-charge for proper electrical safely.

vii) “SCADA" telementry system if available should be operational for remote opening and closing of wells at unmanned platforms (through RPMC).

viii) Local ESD/FSD (near the work site) should be provided for jobs of very critical nature, so that the persons working can access it immediately in emergency for safety. Safety officer should judge the requirement & inform FPS for the same.

ix) Railings and Gratings etc. in and around work area should be O.K. and inspected to avoid slippage of man into sea.

x) Emergency shut down (ESD) system is initiated when an abnormal condition is detected. ESD should be checked once in six months.

xi) Platform should be manned round the clock.

xii) Welding and cutting work should be regulated by hot work permit.

xiii) All detectors should be calibrated as per recommendation of the manufacturer.

xiv) No system should be by-passed which affects the system of platform.

xv) In H_2S field platforms, due care shall be taken as per recommendations.

xvi) Follow the instructions of F.P.S. during stay at platform

6.12.5 Fire Prevention And Control

i) Provision be made for safe handling and storage of dirty rags, trash, and waste oil. Flammable liquids and chemicals applied on platform should be immediately cleaned.

ii) Paint containers and hydrocarbon samples, gas cylinders for welding and cutting should be stored properly. Cylinders should be transported in hand-cart.

iii) Smoking should be restricted and no smoking area should be identified.

iv) Special attention should be given to crude oil pump seals, diesel and gas engines which are potential source of ignition in the event of failure.

v) Fire and smoke detectors i.e. ultraviolet heat, thermal and smoke detector should be function tested once in three months.

vi) Fire is controlled in offshore by water spraying, Halon, CO_2 flooding, DCP and sprinkler system.

vii) Foaming agent is applied for controlling fire in liquid hydrocarbon. The system is not effective in gas fire.

viii) Light weight breathing system should be used.

ix) The fire control plan at offshore should reveal control station, fire alarms and fire detectors, deluge valves and sprinkler, fire extinguishing appliances, fireman outfit and ventilation system.

x) Fire fighting equipment should be maintained in ready to use condition.

6.12.6 Life Saving Appliances

i) Life boats with a speed of 6 knots and carrying capacity upto 50 persons are used in offshore.

ii) No. of life boats on one installation should have a capacity to accommodate twice the number of persons onboard installation.

iii) Launching appliances and life boat equipment should be checked every week.

iv) Boat landing areas should be adequately illuminated.

v) Life raft has no power and they rely on drift.

vi) Life jacket lifts the wearer after entering water.

vii) Life buoys are used to rescue persons if any person accidentally falls in the sea.

viii) All life saving appliances should be inspected by the MMD surveyor /sr. officials once a year.

ix) Every life boat shall be inspected once a week.

x) Every life boat and life raft should be serviced once a year by a competent authority,

6.12.7 Safety Precautions during Helicopter Transportation

i) Passenger briefing regarding safety rules while travelling in helicopter should be carried out before boarding the helicopter.

ii) Emergency procedure should be briefed to all the passenger In case helicopter is to ditch into the sea.

iii) Heli-pad should have a non-skid surface. Nylon rope net should be stretched on the deck.

iv) Proper drainage should be available on helideck.

v) There should be no obstruction on the helideck itself and within 3 meters of its parameter. Closest super structure above the helideck should have red obstruction light.

vi) While landing fire crew of two persons should be standby adjacent to helideck.

vii) Heli-deck should be properly illuminated for night landing.

viii) During switching off helicopter, persons should not be allowed to go out/ towards helicopter

6.13 DEMOLITION

6.13.1. General provisions

i) When the demolition of any building or structure might present danger to workers or to the public:

   (a) necessary precautions, methods and procedures should be adopted, including those for the disposal of waste or residues;
   (b) the work should be planned and undertaken only under the supervision of a competent person.

ii) Before demolition operations begin:

   (a) structural details and builders' drawings should be obtained wherever possible;
   (b) details of the previous use should be obtained to identify any possible contamination and hazards from chemicals, flammables, etc.;
   (c) an initial survey should be carried out to identify any structural problems and risks associated with flammable substances and substances hazardous to health. The survey should note the type of ground on which the structure is erected, the condition of the roof trusses, the type of framing used in framed structures and the load-bearing walls;
   (d) a method of demolition should be formulated after the survey and recorded in a method statement having taken all the various considerations into account and identifying the problems and their solutions;

iii) All electric, gas, water and steam service lines should be shut off and, as necessary, capped or otherwise controlled at or outside the construction site before work commences.

iv) If it is necessary to maintain any electric power, water or other services during demolition operations, they should be adequately protected against damage.

v) As far as practicable, the danger zone round the building should be adequately fenced off and sign posted. To protect the public a fence 2m high should be erected enclosing the demolition operations and the access gates should be secured outside working hours.

vi) The fabric of buildings contaminated with substances hazardous to health should be decontaminated. Protective clothing and respiratory devices should be provided and worn.

vii) Where plant has contained flammable materials, special precautions should be taken to avoid fire and explosion.

viii) The plant to be demolished should be isolated from all other plant that may contain flammable materials. Any residual flammable material in the plant should be rendered safe by cleaning, purging or the application of an inert atmosphere as appropriate.

ix) Care should be taken not to demolish any parts, which would destroy the stability of other parts.

x) Demolition activities should not be continued under adverse climatic conditions such as high winds, which could cause the collapse of already weakened structures.

xi) To prevent hazards parts of structures should be adequately shored, braced or otherwise supported.

xii) Structures should not be left in a condition in which they could be brought down by wind pressure or vibration.

xiii) Where a deliberate controlled collapse technique is to be used, expert engineering advice should be obtained, and:

   (a) it should only be used where the whole structure is to come down because it relies on the removal of key structural members to effect a total collapse;
   (b) it should only be used on sites that are fairly level and where there is enough surrounding space for all operatives and equipment to be withdrawn to a safe distance.

xiv) When equipment such as power shovels and bulldozers are used for

demolition, due consideration should be given to the nature of the building or structure, its dimensions, as well as to the power of the equipment being used.

xv) If a swinging weight is used for demolition, a safety zone having a width of at least one-and-a-half times the height of the building or structure should be maintained around the points of impact.

6.13.2. Demolition of structural steelwork

i) All precautions should be taken to prevent danger from any sudden twist, spring or collapse of steelwork, ironwork or reinforced concrete when it is cut or released.

ii) Steel construction should be demolished tier by tier.

iii) Structural steel parts should be lowered and not dropped from a height.

6.14 RADIOGRAPHY

6.14.1 All radiography jobs shall be carried out as per BARC Safety Regulations

6.14.2 During field radiography, nearby area around the radiation source should be cordoned off.

6.14.3 If the field radiography is to be done at the same location repeatedly, it is advisable to provide either a wire fencing around or a temporary brick enclosure.

6.14.4 Special permission/permit should be taken for radiography from area-in-charge.

6.14.5 As far as possible, field radiography should be done only during night time when there is little or no occupancy there.

6.14.6 Radiation warning signals should be pasted all along the cordoned off area.

6.14.7 Entry into the restricted area by unauthorised persons should be strictly prohibited during exposure.

6.14.8 The radiation level alongwith the cordon should be monitored by a suitable and well-calibrated radiation survey meter.

6.14.9 All personnel working with radiography sources should wear appropriate protective equipment and film badges issued by BARC.

6.14.10 Protection facilities such as manipulator rod, remote handling tongs, lead pots, radiation hazard placards and means of cordon off shall be available at each site.

6.14.11 The radiography source shall never be touched or handled directly with hands.

6.14.12 The package containing radiography cameras and sources should never be carried by public transport like bus, train etc.

6.14.13 Radiography sources and cameras, when not in use, should be stored inside a source pit with lock and key arrangement as approved by BARC. The storage room should preferably be located in an isolated area of minimum occupancy and radiation level outside the storage room should not exceed 0.25 mR/hr as per BARC Regulations.

6.14.14 In case of an accident (due to loss or of damage to radiography source), action should be taken in line with BARC Safety Rules/Guidelines.

6.15 SAND/SHOT BLASTING/ SPRAY PAINTING

6.15.1 Sand blasting should be used only after approval from competent person.

6.15.2 Air Compressor used for sand/shot blasting/painting should have guard and positioned away from the work place.

6.15.3 Exhaust of the prime mover, if IC engine is used, should be directed away from the work place.

6.15.4 In case of motor driven compressor, the body of the motor as well as the compressor to be properly earthed.

6.15.5 The hoses used for compressed air should be of proper quality, and health of the same to be ensured through regular check/ test.

6.15.6 The operator of sand/shot blasting/painting should wear suitable PPE's including mask.

6.15.7 Adequate measures to be taken to suppress dust/spray particle.

6.15.8 Sand used for sand blasting should be suitably covered & protected from to rain/moisture.

6.15.9 When these activities are done in confined places, adequate measure to be taken for proper ventilation.

6.16 WORK ABOVE WATER

6.16.1 General Provisions

i) Where work is done over or in close proximity to water & where possibility of drowning exists, provision should be made for:

a) Preventing workers from falling into water;
b) The rescue of workers in danger of drowning;
c) Safe and sufficient transport.

ii) Provisions for the safe performance of work over or in close proximity to water should include, where appropriate, the provision and use of suitable and adequate:

a) fencing, safety nets and safety harnesses;
b) lifebuoys, life jackets and manned boats;
c) protection against such hazards as reptiles and other animals.

iii) Gangways, pontoons, bridges, footbridges and other walkways or work places over water should:

a) possess adequate strength and stability;
b) be sufficiently wide to allow safe movement of workers;
c) have level surfaces free from tripping hazards;
d) be adequately lit when natural light is insufficient;
e) where practicable and necessary, to prevent danger, be provided with toe-boards, guard rails, hand ropes etc.
f) be secured to prevent dislodgment by rising water or high winds;
g) if necessary, be equipped with ladders which should be sound, of sufficient strength and length and be securely lashed to prevent slipping.

iv) All deck openings including those for buckets should be fenced.

6.16.2 Rescue & Emergency procedures

i) Persons who work over water should be provided with some form of buoyancy aid. Life jackets should provided sufficient freedom of movement, have sufficient buoyancy to bring persons to the surface and keep them afloat face upwards, be easily secured to the body, be readily visible by way of self luminous paint/strip.

ii) Nobody should work alone on or above water.

iii) Each worker should be trained in the procedure to be followed in the event of an emergency.

7.0 ADDITIONAL SAFETY PRECAUTION FOR UNITS WITH HYDROCARBONS

In addition to general safety precautions as outlined above for the activities in Clause 6.0, following additional safety precautions need to be taken for the sites within the operating area or nearby, where presence of Hydrocarbons cannot be ruled out.

i) No job shall be carried out without a valid permit. Permit should be in line with OISD-STD-105 "Work Permit System".

ii) Smoking should be prohibited in all places containing readily combustible or flammable materials and "No Smoking" notices be prominently displayed.

iii) In confined spaces and other places where flammable gases, vapours or dusts can cause danger, following measures should be taken:

(a) only approved type electrical installations and equipment, including portable lamps, should be used;
(b) there should be no naked flames or source of ignition;
(c) oily rags, waste and clothes or other substances liable to spontaneous ignition should be removed without delay to a safe place;
(d) ventilation should be provided.

iv) Regular inspections should be made of places where there are fire risks. These include the vicinity of heating appliances, electrical installations and conductors, stores of flammable and combustible materials, welding and cutting operations.

v) Welding, flame cutting and other hot work should only be done after issuance of work permit in line with the requirement of OISD-STD-105 after appropriate precautions, as required, are taken to reduce the risk of fire. For carrying out other jobs also, OISD-STD-105 should be followed strictly.

vi) Fire-extinguishing equipment should be well maintained and inspected at suitable intervals by a competent person. Access to fire-extinguishing equipment such as hydrants, portable extinguishers and connections for hoses should be kept clear at all times.

vii) All supervisors and a sufficient number of workers should be trained in the use of fire-extinguishing equipment, so that adequate trained personnel are readily available during all working periods.

viii) Audio means to give warning in case of fire should be provided where this is necessary to prevent danger. Such warning should be clearly audible in all parts of the site where persons are liable to work. There should be an effective evacuation plan so that all persons are evacuated speedily without panic and accounted for and all plant and processes shut down.

ix) Notices should be posted at conspicuous places indicating:

(a) the nearest fire alarm;
(b) the telephone number and address of the nearest emergency services.

x) The work site shall be cleared of all combustible materials, as Sparks and molten metal coming from the welding job can easily ignite combustible materials near or below the welding site. If the combustible materials cannot be removed from the area, the same shall be properly shielded.

xi) A dry chemical type fire extinguisher shall be made available in the work area. Also fire protection facilities like running hoses etc. as per permit should be complied with.

xii) Wherever required, welding screens shall be put up to protect other equipment in adjoining areas against flying sparks. Material used should be metal/asbestos/water curtain.

xiii) Welding or cutting of vessels/ equipments used in Hydrocarbon/ hazardous chemicals shall be done after proper gas freeing and verifying the same with the explosive-meter.

xiv) The confined space/equipment shall be gas freed and cleaned.

xv) Absence of any toxic gas and any flammable gas above explosion limit shall be ensured with the help of gas detection instrument and explosive meter respectively.

xvi) Used and hot electrode stubs shall be discarded in a metal bucket.

xvii) Use approved and certified flame arrestors for vehicles.

xviii) Work permit to be obtained, if construction work is carried out within existing operating area.

8.0 FIRST AID

First aid facilities should be provided in line with various statutory regulations like factory act etc. However following care should be taken:

i) First aid, including the provision of trained personnel should be ensured at work sites. Arrangement should be made for ensuring the medical attention of the injured workers. First aid box should be as per the Factory rules.

ii) Suitable rescue equipment, like stretchers should be kept readily available at the construction site.

iii) First-aid kits or boxes, as appropriate and as per statutory requirements, should be provided at workplaces and be protected against contamination by dust, moisture etc.

iv) First-aid kit or boxes should not keep anything besides material for first aid in emergencies.

v) First-aid kits and boxes should contain simple and clear instructions to be followed, be kept under the charge of a responsible person qualified to render the first aid and be regularly inspected and stocked.

vi) Where the work involves risk of drowning, asphyxiation or electric shock, first-aid personnel should be proficient in the use of resuscitation and other life saving techniques and in rescue procedures.

vii) Emergency telephone numbers of nearby Hospitals, Police, Fire Station and Administration should be prominently displayed.

9.0 DOCUMENTATION

The intention of keeping documentation of all types of accident(s) is to prevent recurrence of similar accident(s). All accidents should be reported as per OISD Guidelines (OISD-GDN-107) and Factories act, 1948.

All accidents (major, minor or near miss) should be investigated, analysed and recommendations should be documented along with implementation status.

All related data should be well-documented and further analysis highlighting the major cause(s) of accidents be done. This will help in identifying thrust areas and training needs for prevention of accidents.

10.0 SAFETY AWARENESS & TRAINING

Safety awareness to all section of personnel ranging from site-in-charge to workmen helps not only preventing the risk but also build up the confidence. Time and expenditures also get saved as a result.

Safety awareness basically seeks to persuade/inform people on safety besides supplementing skill also. Awareness programme may include followings:

i) **Poster:** Posters with safety slogan in humorous, gruesome demonstrating manner may be used to discourage bad habits attributable to accidents by appealing to the workers' pride, self-love, affection curiosity or human aspects. These should be displayed in prominent location(s).

ii) **Safety Sign Boards**: Different type of message of cautioning, attention, notice etc. should be displayed at the appropriate places for learning/ awareness of the workmen while working at site.

iii) **Films & Slides:** Film(s) narrating the accident including the causes and possible remedial ways of preventing the recurrence of a similar accident should be displayed at regular intervals. Slides consisting main points of the film show may also be shown to workers.

iv) **Talks, lectures & conferences:** The success of these events would depend much on audience's understandings of the speaker (s). The speakers are to be knowledgeable and good presenter. Speakers should know to hold the attention and to influence the audiences.

v) **Competitions:** Organise competition(s) between the different deptts/categories of workers. The sense of reward/recognition also will improve safety awareness and result in enhancing safety levels.

vi) **Exhibitions:** Exhibitions also make the workers acquainted with hazards and means of preventive measures.

vii) **Safety Publication:** Safety publications including pocket books dealing with ways of investigation and prevention in the field of safety and so on, may be distributed to workers to promote the safety awareness.

viii) **Safety Drives:** From time to time, an intensive safety drive by organising a safety day or a safety week etc. should be launched.

ix) **Training:** Training for covering the hazards for different trade should be imparted. Training should also include the specific hazards related

to a job in addition to the general safety training as has been dealt in various chapters and should include all workers. Reference may be drawn from OISD-STD-154.

11.0 REFERRENCES

i) *Factory Act, 1948*

ii) *Indian Electricity Rules*

iii) *Safety & Health in Construction by ILO*

iv) *The Building & Other Construction Workers (Regulation, Employment and Conditions of Service) Act 1996*

ANNEXURE I

LIST OF SAFETY CODES FOR CIVIL WORKS PUBLISHED BY BUREAU OF INDIAN STANDARDS

Sr.no	Code No.	Title
01.	IS : 818	Code of Practice for Safety and Health Requirements in Electric and Gas Welding and Cutting Operations – First Revision.
02.	IS : 875	Code of practice for Structural safety of buildings: Masonry walls
03.	IS : 933	Specification for Portable Chemical Fire Extinguisher, Foam Type – Second Revision.
04.	IS : 1179	Specification for Equipment for Eye and Face Protection during Welding – First Revision.
05.	IS : 1904	Code of practice for Structural safety of buildings: Shallow foundations
06.	IS : 1905	Code of practice for Structural safety of buildings: Masonry walls
07.	IS : 2171	Specification for Portable Fire Extinguishers, Dry Powder Type – Second Revision.
08.	IS : 2361	Specification for Building Grips – First Revision.
09.	IS : 2750	Specification for Steel Scaffoldings.
10.	IS : 2925	Specification for Industrial Safety Helmets – First Revision.
11.	IS : 3016	Code of Practice for Fires Precautions in Welding and Cutting Operations – First Revision.
12.	IS : 3521	Industrial safety belts and harnesses
13.	IS : 3696 – Part I	Safety Code for Scaffolds and Ladders : Part I – Scaffolds.
14.	IS : 3696 – Part II	Safety Code for Scaffolds and Ladders : Part II – Ladders.
15.	IS : 3764	Safety Code for Excavation Work.
16.	IS : 4014 -Part I & II	Code of practice for Steel tubular scaffolding
17.	IS : 4081	Safety Code for Blasting and Related Drilling Operations.
18.	IS : 4082	Recommendations on staking and storage of construction materials at site
19.	IS : 4130	Safety Code for Demolition of Buildings – First Revision.
20.	IS : 4138	Safety Code Working in Compressed Air-First Revision
21.	IS : 4756	Safety code for Tunneling works
22.	IS : 4912	Safety requirements for Floor and Wall Openings, Railings and toe Boards –First Revision.
23.	IS : 5121	Safety Code for Piling and other Deep Foundations.
24.	IS : 5916	Safety Code for Construction involving use of Hot Bituminous Materials.
25.	IS : 5983	Specification for Eye Protectors – First Revision.
26.	IS : 6922	Structures subject to underground blasts, criteria for safety and design of
27.	IS : 7155	Code of recommended practices for conveyor safety
28.	IS : 7205	Safety Code for Erection on Structural Steel Works.

Sr.no	Code No.	Title
29.	IS : 7069	Safety Code for Handling and Storage of Building Materials.
30.	IS : 7293	Safety Code for Working with Construction Machinery.
31.	IS : 7323	Guidelines for operation of Reservoirs
32.	IS : 7969	Safety code for handling and storage of building material
33.	IS : 8758	Recommendation for Fire Precautionary Measures in construction of Temporary Structures and Pandals.
34.	IS : 8989	Safety Code for Erection of Concrete Framed Structures.
35.	IS : 9706	Code of Practices for construction of Arial ropeways for transportation of material
36.	IS : 9759	Guidelines for de-watering during construction
37.	IS : 9944	Recommendations on safe working load for natural and man-made fibre roap slings
38.	IS : 10291	Safety code for dress divers in civil engineering works
39.	IS :10386 – Part I	Safety Code for Construction, Operation and Maintenance for River Valley Projects.
40.	IS :10386 – Part II	Safety Code for Construction, Operation and Maintenance of River Valley Projects.
41.	IS : 11057	Code of practice for Industrial safety nets
42.	IS : 13415	Code of Practice on safety for Protective barriers in and around building
43.	IS : 13416	Recommendations for preventive measures against hazards at working places

OISD – GDN – 207

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OCTOBER 2002

CONTRACTOR SAFETY

OISD – GUIDELINES – 207

Oil Industry Safety Directorate
Government of India
Ministry of Petroleum & Natural Gas

CONTRACTOR SAFETY

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CONTRACTOR SAFETY

1.0 INTRODUCTION

Oil and Gas operations like Drilling, Production, Refining, Transportation and Distribution are inherently hazardous. A large number of contractor workforce is deployed to carry out construction, maintenance and other jobs. The analysis of the incidents in the Petroleum Sector indicates that a large number of incidents involved contractor workforce and have resulted in either casualty or injury besides leading to property damage and operational interruptions and environmental degradation.

In order to improve the safety levels of oil installations, the contractor safety is of utmost importance and there is a need to institute a good contractor safety system.

2.0 SCOPE

This standard covers broadly the guidelines on the management system for enhancing the safety levels of the contractor workforce deployed in construction, maintenance and operation activities in the hydrocarbon industry.

The safety precautions to be taken while carrying out different activities during construction / maintenance have separately been covered in OISD-GDN-192 on "Safety Practices during Construction".

3.0 DEFINITIONS

Work station/Work site

A place/unit where the job is carried out by contractor/executing agency in specified manner with safety, during construction phase or in operation phase.

Owner

Any physical or legal person/entity for whom prescribed job is carried out.

It shall also include owner's designated representative / consultant /nominee / agent, authorised from time to time to act for and on its behalf, for supervising / co-ordinating the activities of the contractor/execution agency.

Contractor / Executing Agency

A physical or legal person/entity having contractual obligation with the owner, and who deploys one or more worker on the site.

Contractor Worker

It covers all workmen who are either self-employed or employed through contractor, the casual workers and includes contractor's supervisor, working at a location / site employed directly by Owner or through their contractor.

Incident

An incident is an unplanned, uncontrolled, unintended or unforeseen event, caused by unsafe acts and / or unsafe conditions, resulting in or having the potential to result in personal injury and/or property damage.

Consultant

Consultant is a physical or legal person/entity engaged by owner to provide the consultancy services to owner for management of the contract on their behalf or as specified.

Designer

Designer is a physical or legal person / entity engaged by owner to provide design services of a work site.

Owner's Representative / Engineer In Charge

The Owner's representative/Engineer-in-charge is the one, who has been designated by the owner to manage the contract.

Owner's Safety Officer

A properly trained person designated by owner who ensures safety at work site.

4.0 DUTIES/ RESPONSIBILITIES

4.1 OWNER

4.1.1 Owner's Management

The commitment to safety has to be emphasised by the owner by practice by its own management and employees at all levels. The duties and responsibilities of owner should include:

i) To institute a mechanism for identification and compliance of all applicable statutory rules & regulations (Refer Annexure I for a list of few important Bureau of Indian Standards & statutory regulations).

ii) To provide specific information to contractors and make workers aware on the hazards associated with job assigned.

iii) To provide information about Risk Mitigation measures available at the place of work.

iv) To provide the contractor with information on Owners Safety Plan & Regulations, Emergency Management Plan, lockout/ tag out procedure, confined space entry, work permit system, excavation/trench permit system etc.

v) To specify rules (e.g. for security including access arrangements) and safety rules such as fire protection, first aid arrangements, Work Permit systems etc.

vi) To provide comprehensive list of statutory regulations / standards and specification, to be complied with during execution of contract, in the tender document itself.

vii) To ensure training of the contractor workforce, medical examination, and proper usage of safety equipment.

viii) To specify the requirements of Health, Safety and Environment (HSE) (commensurate with the nature of job) in Pre- Qualification criteria.

ix) To designate Engineer-in-charge and safety officer.

x) To arrange for a multi-disciplinary safety audit team to conduct surprise / regular safety audits and monitor the implementation of the recommendations.

xi) To introduce suitable schemes for motivation of the contractor worker to adhere to safety guidelines.

xii) To review safety practices & their implementation through periodic surprise visit of the work sites and monthly review meeting.

xiii) To develop the HSE plans and incorporate the same in the tender document.

xiv) To liaise with external agencies like press, public etc and with law enforcement, regulatory, statutory agencies etc.

xv) To report to statutory agencies on safety compliance and accidents, if any.

4.1.2 Owner's Representative/Engineer-in-charge

The duties & responsibilities of engineer-in-charge should include:

i) To ensure that all Contract requirements including Health, Safety, Environment & Security are complied with.

ii) To ensure that contractor workforce deployed is adequately qualified, trained and in state of health to commensurate with the requirements of the job.

iii) To ensure that the Tools / Tackles and Machinery being used are properly

tested and are in sound working conditions and necessary resources proposed for providing safe place of work and necessary PPE are being used.

iv) To take the required necessary corrective action immediately upon noticing or receipt of a report on noncompliance or any such condition which poses a threat to health, safety or environment. If during the course of execution of the contract, any situation of non-compliance with the contractor's safety and health plan are noticed / reported, the same will be taken up with the contractor for correction. In the event of repeated non compliance, suitable action to be initiated as per the contract.

v) To ensure that the incidents are reported to all concerned within stipulated timeframe.

vi) To ensure submission of a plan for safe working (Method Statement) from contractor and approval of the same by competent person / department.

vii) To ensure that Work Permit System in line with OISD-STD-105 is adhered to.

viii) To ensure availability of all the documentation needed for the execution of contract.

ix) To ensure that the quality controls have been maintained during fabrication/erection and all jobs required for safe commissioning have been carried out.

x) To ensure safe dismantling of all temporary facilities/connections put up by the contractor, after completion of work.

xi) To compile a report on the safety performance (at the conclusion of each contract or periodically such as annually for renewable and long-term contracts), which is to be considered in future when selecting contractors.

xii) To ensure that the Consultant, contractor and sub-contractor employ / designate qualified & trained Safety Engineer / Officer commensurate with requirement of the job.

4.1.3 Owner's Safety Officer

The duties & responsibilities of the Owner's Safety Officer should include:

i) To assess the hazards associated with jobs in consultation with all concerned and establish safe working procedure including identification of the escape routes.

ii) To establish a written record of factors which can cause injuries and illnesses.

iii) To undertake routine/surprise inspections of all work sites and identify unsafe conditions & practices, if any. Check for compliance of the safety practices being followed with approved HSE Plan.

iv) To investigate promptly the incidents (including near-miss) in order to advise corrective and/or preventive action.

v) To maintain statistical information for use in analyzing all phases of incidents and events involving contract personnel.

vi) To provide the means for complying with the reporting requirements for occupational injuries and illnesses.

vii) To check whether the proposed working arrangements are safe and satisfactory, particularly at the interface between the contractor's planned work and owner’s existing facilities.

viii) To communicate to the Contractor the imposed restrictions which may affect the work/personnel such as the temporary closure of a corridor or electrical isolation of equipment.

ix) To review and monitor the contractor's adherence to approved HSE plan and all applicable environmental, health, and safety requirements.

x) To ensure that Consultant, Contractor's Managers, Supervisors and workmen at all levels (who will plan, monitor, oversee and carry out the work) undergo Health, Safety and Environmental training in their respective responsibilities with respect to conducting work safely and with due regard for the protection of the environment.

xi) To identify areas of operations where specialized training is required to deal with potential dangers.

xii) To document and to bring to the attention of the Owner's Supervisor and Contractor any non-compliance/violation of the safety norms against approved safety and health plan or safety and health requirements and also raise these issues in the Safety Committee Meetings.

xiii) To take part in Tool Box Meetings at random and to ensure maintenance of records.

4.2 CONTRACTOR

4.2.1 Contractor's Management

Duties & responsibilities of the contractor should include the following:

i) To implement safe methods and practices, deploy appropriate machinery, tools & tackles, experienced supervisory personnel and skilled work force etc. required for execution.

ii) To prepare a comprehensive and documented plan for implementation, monitoring and reporting of Health, Safety and Environment (HSE) and implement the same after its approval.

iii) To nominate qualified & trained Safety Engineers / Officers reporting to the Site in charge, for supervision, co-ordination and, liaison for the implementation of the safety plan.

Similar HSE Plan should be implemented at the sub- contractor's or supplier's site /office. However the compliance with the HSE Plan is to be the sole responsibility of the Contractor.

iv) To arrange suitable facilities in liaison with the owner for drinking water, toilets, lighting, canteen, crèche etc as applicable as per Laws/ Legislation at site and also arrange for workmen compensation insurance, third party liability insurance, registration under ESI / PF act etc as applicable.

v) To arrange for fire protection equipment as per the advice of owner.

vi) To ensure that its employees have completed appropriate health and safety training as required by the statute / regulation and also as per requirements of the Owner / Consultant. The documentation of such training imparted to all its employees should be maintained and produced for verification as required.

vii) To comply with all the security arrangements of owner.

viii) To ensure that the plant and equipment used on-site by him / his employees is correctly registered, controlled and maintained in sound working condition.

ix) To ensure availability of First Aid boxes and First Aid trained attendant.

x) To ensure that all incidents including near misses are reported to all concerned immediately.

In construction projects where sub-contractors are engaged, the contractor should set out the responsibilities, duties and safety measures that are expected of

the sub-contractor's workforce. These measures should include the provision and use of specific safety equipment, methods of carrying out specific tasks on safety and the inspection and appropriate use of tools.

The responsibilities indicated separately under contractor's Supervisor, Safety Officer and contract worker are contractually that of the Contractor and legally binding on the Contractor only. However the specific detailing as above has been given separately for guidance and operational convenience.

The selection of sub contractors, if employed, should be approved by the owner. Sub-contractor should comply fully with all safety rules and conditions applicable to the main contractor.

4.2.2 Contractor's Supervisor / Safety Officer

Duties & responsibilities of the Contractor's supervisor/Safety Officer should include the following:

i) To ensure strict compliance with work permit system by carrying out work only with appropriate work permits and after ensuring that all safety precautions / conditions in the permit are complied with and closing the same after job completion.

ii) To ensure that required guards and protective equipment are provided, used, and properly maintained.

iii) To ensure that tools and equipment are properly maintained and tested.

iv) To plan the workload and assign workers to jobs in commensuration with their qualification, experience and state of health.

v) To ensure that the workers understand the work to be done, the hazards that may be encountered, and the proper precautions/procedure for carrying out the work safely.

vi) To take immediate action to correct any violation of safety rules observed or reported.

vii) To ensure that the workers likely to be exposed to hazardous chemicals/materials have access to appropriate Material Safety Data Sheets (MSDS), wherever applicable, and provide necessary mitigation measures.

viii) To ensure inspection and certification of all tools (hand operated as well as mechanically operated) being used. Defective tools shall be immediately removed.

ix) To ensure that appropriate warning signboards or tags are displayed.

x) To ensure that workers have proper training for their job assignments, including use of appropriate PPE and first aid fire fighting equipment.

xi) To comply with all applicable safety and health standards, rules, regulations and orders issued by competent authority pertaining to the assigned activities.

xii) To ensure that sick and/or injured workers receive appropriate first aid and/or medical attention.

xiii) To report each incident and/or injury in accordance with established procedures and assist in investigation.

xiv) To take necessary action for correction of any unsafe act / condition at the workplace. However, in case the same is outside the limits of authority, it should be reported to Owner's Engineer-in-charge immediately.

xv) To conduct daily inspections to ensure compliance with safety standards, codes, regulations, rules and orders applicable to the work concerned.

xvi) To ensure that workers under their supervision are aware of their responsibilities.

xvii) To arrange daily tool box meeting and regular site safety meetings and maintain records in the required formats. (Refer Clause 5.9.1)

xviii) To arrange stand-by supervisor/ worker where situations so demand.

xix) To develop methods and display banners/posters to inculcate safety consciousness.

xx) To attend training and ensure participation of his workers for training as per schedule arranged by the Owner / Consultant and keeps himself updated.

xxi) To keep records of number of persons working at the site.

xxii) To keep a constant liaison with Engg-in-charge / owners' representative on safety issues.

xxiii) To maintain accident & nearmiss record in a register.

xxiv) To ensure that only PPE of the approved type by owner is used at site.

A separate Safety Officer should be assigned, where more than 100 workers are employed at site. For smaller jobs, the supervisor should assume the role of the safety officer also.

4.2.3 Contract workers

The duties & responsibilities of the contractor worker should include the following:

i) To perform work safely as per the job requirement and instructions.

ii) To inform all concerned regarding unsafe conditions/acts.

iii) To wear PPE as stipulated and necessary for the job.

iv) To inform promptly to their supervisor regarding all work related incidents resulting in personal injury, illness and/or property damage.

v) To take all necessary and appropriate safety precautions to protect themselves, other personnel and the environment.

4.3 CONSULTANT

The activities and responsibilities covered under the scope of the Owner may be delegated to the consultant in those cases as applicable, based on the respective contract conditions. The primary responsibility of Consultant is to ensure compliance with agreed HSE plan for the contract by the Contractor. However those responsibilities conferred on Owner as Principal employer cannot be delegated to consultant.

Where the consultant's scope involves Engineering and Design, those factors under **Designer** should also be applicable.

In all cases, the Consultant's scope should include submission of latest HSE plans for work under his and Contractor's purview and implementing the same till job completion. It should conform to owner's overall HSE plan. This should include Guidelines and Implementation and Reporting Methodology to be followed with required report formats.

Adequate number of Safety Officers shall be provided by the Consultant with necessary skills required for the work to be performed.

The Consultant shall review the documents submitted by the contractor and advise owner on acceptance as well as advise suitability and number of Contractor's safety officers / supervisors.

4.4 DESIGNER

The Process Designer should identify all hazards and risks likely to be encountered during fabrication, erection including

dismantling, Pre-commissioning, commissioning and Performance run to meet the Guarantees and advise the risk mitigation measures.

All the hazards and safety measures to be adopted while handling Dangerous chemicals and Catalysts should be detailed by the Process Licensor and the same should be again included in the scope of the suppliers. Specific write ups/MSDS should be obtained from Patented single source suppliers also.

Designs should recognize, include and apply safe practice during preparation, construction and subsequent operational use and maintenance after completion of the Project.

All documents including drawings and calculations are to be originated, checked and approved in accordance with latest international codes, standards, specifications and design basis philosophy.

Preferred use of low risk materials, policy on hazardous substances, preferred use of low noise and dust-suppressed equipment etc. should be encouraged.

5.0 SAFETY MANAGEMENT

5.1 JOB SAFETY ANALYSIS (JSA)

Job safety analysis (JSA) provides a mechanism by which the contractor, safety officer or supervisor take a detailed look at how an individual task is performed and its inherent hazards and preventive measures. This procedure helps in integrating accepted safety and health principles and practices into a particular operation. In a JSA, each step of the job is examined to identify potential hazards and to determine the safest way to do the job.

A job safety analysis includes five steps as below:

- Select a job
- Break the job down into a sequence of steps
- Identify the hazards against each of these steps (based on knowledge of accident, causes of injuries and personal experience) and determine the preventive measures to overcome these hazards
- Apply the controls to the hazards
- Evaluate the controls

5.2 CRITERIA OF SELECTION OF A CONTRACTOR

“Contractor Safety” can be ensured to a large extent if competent agency for execution of assignment or job, based on HSE system agreed upon by owner, is selected. It is necessary to assess his capabilities and competencies to perform work safely.

A databank should be developed for all the contractors for their past performance on HSE aspects. An attempt should also be made to get similar data from other similar industries.

The data required will depend upon complexity involved in the job and type / size of resources required. Format needs to be suitably developed depending upon size, nature of the job & hazard associated therein. The format designed should also take care of the skill required to carry out the job.

Performance review is essential for all type of contractors. It helps in recording actual performance/experience with contractors while the contract is in progress. It is essential that resources agreed as per the contract are reviewed at mobilization stage for ensuring compliance from the day one and thorough effective supervision / monitoring system are at place.

This activity also helps in taking timely action in case of unsatisfactory performance to correct the situation and ensure safe work during execution period and deciding about suitability of the contractor for future jobs.

The periodicity of such performance review will depend upon size/type/complexity of contract. However, the performance should be reviewed at least at mobilisation stage and at the end of the contract.

5.3 SITE PLANNING AND LAYOUT

Before starting the construction/maintenance job at existing workplace in operation or green field locations, following should be ensured: -

i) Details regarding location of workshop/ fabrication yard, site office, stores, laboratory, electrical installations, placement of construction machinery, medical and welfare facilities, lighting underground and above ground piping route, cable route etc. should be decided prior to commencement of the work in consultation with owner / Consultants and implementation should be ensured. Layout should be displayed at strategic locations.

ii) The resources required to meet any emergency situations like fire fighting, first aid etc. should be planned and mobilized as per the job requirement.

iii) The sequence or order in which work to be done and any hazardous operations or processes should be identified.

iv) Free access to site shall be provided with clear roads, passage, gangways, staircases etc. Access to construction site should be leveled, open and free from any obstructions like construction material or scrap/waste, exposure to hazards such as falling materials, material handling equipment and vehicles. Any pit or ditch shall be covered or barricaded.

v) Arrangements should be made to maintain good housekeeping at site. Scrap and debris generated out of construction work should be removed/disposed off at a regular interval as directed. Emergency exit should be provided in case of blockade of primary exit.

vi) Suitable warning notices and also the routes to and from welfare facilities should be displayed prominently.

vii) Pedestrian pathways and routes for vehicular traffic (light/heavy vehicles including material handling equipment) should be earmarked.

viii) Artificial lighting to be provided at places where work continues or workers pass by after sunset or in case natural light is insufficient like confined spaces.

ix) Keep all equipment /machines under cover to prevent them from dust, rain/flood water, heat etc. and follow storage instructions as applicable for each of them.

5.4 GATE ENTRY PROCEDURE

Gate entry at any site / workplace / unit is to be restricted to ensure entry of only authorised persons / vehicles.

5.4.1 Entry procedure for all contractor worker should be as follows:

A. Issuance of Pass

i) The passes are to be issued after the owner's representative/engineer-in-charge forwards the application of the contractor providing complete details of the workers being engaged. The contractor may be asked to submit Character & Antecedents (C&A) verification of individual worker from concerned authorities.

ii) With regard to issuance of passes for all vehicles including material handling equipment, owner's representative / engineer-in-charge should forward the application only after ensuring that all documents pertaining to the fitness of the vehicle/equipment and valid driving license of the driver etc. are available.

iii) The passes should be serially numbered with address, contractor name, identification mark, signature of the worker etc.

iv) Special colour code for passes should be used for persons entering different

areas like Administrative Block, Unit area, Project Area (wherever applicable).

v) Contractor workers engaged on routine basis for long periods should be provided with monthly photo pass.

vi) Special permit is required separately for working beyond normal working hours and holidays.

B. Gate Entry

i) Entry of the contractor's employees should be permitted with valid gate passes only.

ii) Entry of contractor's workers should be allowed in presence of authorized representative of contractor.

iii) Records of persons at the time of entry/exit should be maintained.

iv) At the entry gate of the location, a physical checking for non-carrying of lighter, matchboxes, explosives etc. should be carried out.

v) Gate passes/Identity Cards should be displayed on persons at all the times.

vi) For Mega-projects at existing / operating installations, it is preferable to have a separate gate for entry of contractor workers and also the project areas should be segregated fencing from operational area by fencing / other physical means.

vii) No vehicle should be allowed to enter in an operational area without proper flame arrestor.

viii) Awareness on Safety through training / posters etc. highlighting Do's and Don'ts should be spread within entire contractor workforce. Video/Audio tapes on Safety Topics should be played preferably.

ix) For occasionally engaged labourers such as for material handling etc., spot photograph may be preferably taken with two copies (one for preparing the pass and other for attachment with gate register). Specific advice and recommendation of User Department may be given due cognizance. Relevant details are to be written. The pass should be collected back at the gate after day's work.

5.4.2 Tank Truck Loading (TTL) Operation :

At the loading / unloading location, a large no. of Tank Trucks of petroleum products enter the installation. Crew members are generally not regular entrants. The procedure should be as follows:

i) The gate pass should be issued to the individual crew members on written request of the transporter mentioning TT registration nos., License and certificate of training as per MV rule 9.

ii) Character & Antecedent (C & A) verification of the TTL crew through local police is to be done preferably and record maintained.

iii) For loading/unloading purpose, register entry at security gate is made before allowing entry into the premises with recording of names of crew members, time of entry, pass Sr. No., TT no. etc.

iv) For loading/unloading, crew is allowed entry alongwith TT only, after checking of TT from explosive/security point of view.

v) Out time, invoice no., Destination etc., are recorded while TTs go out of the security gate.

5.5 TRAINING

Training is to educate contractor workforce on various hazards associated with the job/workplace and on the respective preventive / mitigation measures to avoid untoward incidents.

i) Workers should be adequately and suitably:

(a) informed of potential safety and health hazards to which they may be exposed to at their workplace;

(b) instructed and trained in the measures available for the prevention, control and protection against those hazards.

ii) No person should be employed in any work at a workplace unless that person has received the necessary information, instruction and training so as to be able to do the work competently and safely. The competent authority should, in collaboration with employers, promote training programs to enable all the workers to read and understand the information / instructions related to safety and health matters.

iii) The information, instruction and training should be given in a language understood by the worker and written, Oral, visual and participative approaches should be used to ensure that the worker has assimilated the information.

iv) Every worker should receive instruction and training regarding the general safety and health measures common to the workplace. This should include:

(a) general rights and duties of workers at the workplace;

(b) means of access and egress both during normal working and in an emergency;

(c) measures for good housekeeping;

(d) location and proper use of welfare amenities and first aid facilities provided;

(e) proper use and care of the items of personnel protective equipment and protective clothing provided to the worker;

(f) general measures for personal hygiene and health protection;

(g) fire precautions to be taken;

(h) action to be taken in case of an emergency;

(i) requirements of relevant safety and health rules and regulations.

Copies of the relevant safety and health rules, regulations and procedures should be available to workers upon the commencement of and upon any change of employment.

5.5.1 Training Techniques

a) Lectures

This technique should be applied when it is required to transfer information in local language to a large contractor workforce with controlled content and time.

b) Case Study

This is an effective technique based on the presentation of case of real events by Trainer to highlight probable causes like Human Error, ignorance about the job etc.

c) Videos

Videos, an effective technique of communication, should be used to display the right techniques of performing a task in a safe manner and hazards associated with a job.

d) Demonstration at site

Right way to do a job should invariably be demonstrated to workers at the site itself. The right way is also a safe way. Hazards due to wrong procedures, short cuts and their adverse effects etc. should also be highlighted.

5.5.2 Training/Awareness Module and Frequency

A. General Safety Training to all categories of contractor employees should be imparted before induction and annually thereafter. No person should be allowed to enter the installation without undergoing this training. This training program may cover:

i) Mandatory uses of PPE like Cotton clothes, Helmet, Safety Shoes, Safety Belts etc.

ii) Probable Hazards

iii) Important Telephone No / Escape route

iv) First Aid

v) Use of Fire extinguisher

The contractor workers, if engaged in operation of the plants/facilities, should be trained in line with Clause No. 4.6 of OISD-GDN-206 on “Safety Management System”. For other categories of contractor workers, training modules for different category employees are as follows:

B. Contractor Supervisor

Contractor Supervisor should be trained in accordance with the provision of clause no. 5.1.1.2, 5.2.7, 5.3.10, 5.6.12 and 5.7.8 of OISD-STD-154 on 'Safety Aspects in Functional Training'

C. Contractor Worker

Yearly training programme should be carried out for contractor worker and the records should be maintained. The training programme should cover at least the following:

i) Worker responsibility for safety of himself and work area.

ii) Associated hazards with the job and job area including electrical shock hazards.

iii) Importance of First Aid fire fighting equipment, their use & operations

iv) Communication system at the installation

v) Fire / Accident Reporting procedure

vi) General Safety rules

vii) Safety Measures during execution of job such as:

- Welding / Cutting / Grinding
- Working at height
- Confined space entry
- X ray / radiation
- Erection / Dismantling of scaffolding
- Tank construction and repairs
- Handling of chemicals etc.

viii) Importance & use of PPE

ix) Emergency Routes

x) Assembly Points

xi) Job Specific Training

D. Consultant / Contractor

Awareness program should be carried out for Consultant / Contractor at the time of induction. This program should cover at least the following:

i) Responsibility of contractor for safety of their personnel and work area

ii) Hazardous property of Petroleum products and chemical used

iii) Communication system

iv) Fire / Accident Reporting procedure

v) Medical facility available

vi) Statutory requirements

vii) Importance of First Aid equipment and required at the site

viii) Work Permit system

ix) Direct/ Indirect losses due to accident

x) Safety Measures while executing the jobs such as:

- Welding / Cutting / Grinding
- Working at height
- Confined space entry
- X ray / radiation
- Erection / Dismantling of scaffolding
- Tank construction and repairs
- Handling of chemicals etc.
- electrical jobs

xi) Safety training needs of their supervisors and workers

xii) Importance & Use of PPE at the site

xiii) General Safety rules at the installation

E Security Personnel

Training program should be carried out for Security personnel at the time of induction and annually thereafter and the records should be maintained. The training program should cover at least the following:

i) Layout of Plant and Facilities
ii) Vulnerable locations
iii) Safety regulations (Statutory and in company)
iv) Fire Protection Facilities and Locations
v) Role in case of Fire / Disaster
vi) Emergency Procedure and Drills
vii) Industrial First Aid
viii) Use of Personnel Protective Equipment
ix) Disaster Management Plan

5.6 INSPECTION / AUDIT

Inspection / Audit is a tool to evaluate compliance of all safety requirements. Most of the information could be gathered through site inspection using ready-made check lists to ensure that contractors / agencies abide by the safety rules and norms while working at operating / construction sites.

A checklist, while carrying out different type of jobs, should be developed based on hazards associated with the job being performed and requirements as per OISD-GDN-192 on "Safety Practices during Construction". Typical format is enclosed at Annexure II, which should be modified to suit the requirement of the site / job to be done.

Before starting the work and at regular intervals thereafter, Contractor's Supervisor/safety Officer and Owner's representative / Engineer-in charge/safety Officer should inspect as per the checklist so prepared to ensure that contractor has prepared to start the work with all safety precaution required for safe execution of job.

5.7 PENALTIES FOR NON-COMPLIANCE

Financial or other type of penalties like seizure of gate passes, stoppage of work for a limited period etc. may be levied on the contractors or their workers for non-compliance of safety rules. A provision of suitable accident severity based penalty clause for contractor may be incorporated to ensure adherence of systems and procedures. A few of the usual non-compliance are as follows:

-- Non-usage of PPEs like Safety helmet / Safety shoes / Safety goggles / Respiratory protection etc. by the contractor personnel

-- Non-usage of the safety belt and life line by the workers while working at height

-- Non-provision of basic safety requirement such as 24 V lamp for working in confined space, uncertified / non standard lifting tools, earth leakage protection & earthing connections for electrical appliances as per Indian Electricity Rules, emergency isolation switches etc.

-- Violation of Safety Permit conditions like Fire fighting equipment

-- Non-barricading of area while rigging, digging etc.

-- Working without valid work permit

-- Unauthorised road closure/blockage

5.8 INCIDENT REPORTING AND INVESTIGATION SYSTEM

All the incidents including near-miss should be reported immediately by contractor's Supervisor to Contractor and owner's Supervisor/Engineer-in-charge, who should inform to Owner's Safety Officer and owner's Management. Owner's Safety Department will be required for onward reporting as per OISD, Statutory requirements.

All accidents regardless of the extent of injury or damage should be investigated in order to find probable causes, lessons learnt thereof and remedial measures required to prevent its recurrence.

The incident investigation should be done as per provision of clause no. 4.12 of OISD-GDN-206 on 'Safety Management System' . All the recommendations of investigation / Enquiry Report need to be monitored closely for its implementation. A proper record needs to be maintained to ensure implementation of all the recommendations and same should be reviewed from time to time.

5.9 SAFETY COMMITTEE MEETINGS

Following three type of safety committee meetings should be held aiming at raising the level of safety consciousness at the site:

5.9.1 Toolbox meeting

To maintain awareness, update training and convey important safety and health information, contractor supervisors should conduct tool box meetings at least weekly and also prior to start of any work. All the contractor workers should attend this meeting. The owner's supervisor/Engineer-in-charge and safety officers should also attend these meetings on random basis. Tool box meeting should be conducted more frequently depending upon circumstances. Record of the same can be maintained in the following typical format.

TOOLBOX MEETING FORM

SUBJECT :
PRESENTER :
DATE :
TIME : From….. To…..
CONTENT IN BRIEF :

Participant's Name	Signature
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5.9.2 Site Safety Committee Meeting

Primary purpose of this safety committee is to enable owner, contractor and workers to work together to monitor the site safety and health plan so as to prevent accidents and improve working condition on site. Its size and membership will depend on the size and nature of job.

The safety committee should include representatives of owner, consultant, contractor identified as safety officer/supervisor. It should be headed by Engineer-in-charge.

The safety committee should have regular and frequent meetings, atleast fortnightly, to discuss the safety and health program on site and to make suggestions for improvement. The meetings should be documented with a time bound action plan. The functions carried out by safety committee should include:

i) Review compliance of pending items of last Safety meetings.

ii) Consideration of the reports of safety personnel.

iii) Discussion of accident/near-miss and illness reports in order to make appropriate recommendation for prevention.

iv) Examination/evaluation of suggestions made by workers.

v) Dissemination of acquired knowledge through training programs and information sharing sessions.

vi) Discussion & review of Fire Prevention & Disaster Management Plan.

vii) To send recommendation to Apex Body for consideration/approvals.

5.9.3 Safety Review Meeting by Location Head

This meeting should be headed by the Location head and attended by Owner's Supervisor/Engineer-in-charge, owner's safety Officer and all concerned department heads. Prime purpose of this review is to ensure that all the recommendations of various committees are being complied with and to take decisions on critical points raised. This meeting should take place at least once in every quarter. All the investigation reports/ audit findings with status of implementation of recommendations should be discussed.

5.10 SAFETY EQUIPMENT / PERSONNEL PROTECTIVE EQUIPMENT

The type of safety equipment to be used is decided based on the job requirement. Selection should be made based on OISD-GDN-192, OISD-STD-155 (Part I & II) and the job requirement. Safety equipment / Personnel Protective Equipment (PPE) shall be of approved make. Contractor shall provide necessary training to each employee regarding proper usage and upkeep of PPE including its limitation.

A register showing stock and issue of PPE should be maintained by the contractor at site and must be available for inspection.

6.0 REFERENCES

1) OISD-GDN-206 on "Safety Management System"

2) OISD-GDN-192 on "Safety During Construction"

3) OISD-STD-155 Part(I&II) on "Personnel Protective Equipment"

4) Building & Other Construction workers (Regulation of Employment & Condition of Service) Act 1996

ANNEXURE I

LIST OF SAFETY CODES FOR CIVIL WORKS PUBLISHED BY BUREAU OF INDIAN STANDARDS

Sl.no.	Code No.	Title
1	IS: 818	Code of Practice for Safety and Health Requirements in Electric and Gas Welding and Cutting Operations – First Revision.
2	IS: 875	Code of practice for Structural safety of buildings: Masonry walls
3	IS: 933	Specification for Portable Chemical Fire Extinguisher, Foam Type – Second Revision.
4	IS: 1179	Specification for Equipment for Eye and Face Protection during Welding – First Revision
5	IS: 1904	Code of practice for Structural safety of buildings: Shallow foundations
6	IS: 1905	Code of practice for Structural safety of buildings: Masonry walls
7	IS: 1989 – Part II	Leather Safety Boots and shoes for heavy metal industry
8	IS: 2171	Specification for Portable Fire Extinguishers, Dry Powder Type – Second Revision
9	IS: 2361	Specification of Building Grips – First Revision
10	IS: 2750	Specification for Steel Scaffoldings
11	IS: 2925	Specification for Industrial Safety Helmets – First Revision
12	IS: 3016	Code of Practice for Fires Precautions in Welding and Cutting Operations – First Revision
13	IS: 3521	Industrial Safety Belts and harnesses
14	IS: 3696 – Part I	Safety Code for Scaffolds and Ladders: Part I – Scaffolds
15	IS: 3696 – Part II	Safety Code for Scaffolds and Ladders: Part II – Ladders
16	IS: 3764	Safety Code for Excavation Work
17	IS: 4014 – Part I & II	Code of Practice for Steel Tubular Scaffolding
18	IS: 4081	Safety Code for Blasting and Related Drilling Operations
19	IS: 4082	Recommendations on stacking and storage of construction materials at site
20	IS: 4130	Safety Code for Demolition of Buildings – First Revision
21	IS: 4138	Safety Code for working in compressed air – First Revision

22	IS: 4756	Safety Code for Tunneling works
23	IS: 4912	Safety requirements for Floor and Wall openings, Railings and toe boards – First Revision
24	IS: 5216 – Part I & II	Recommendations on safety procedures and practices in electrical work
25	IS: 5121	Safety code for piling and other deep foundations
26	IS: 5916	Safety Code for Construction involving use of Hot Bituminous materials
27	IS: 6994 – Part I	Specifications for safety gloves: Part I – Leather and Cotton gloves
28	IS: 5983	Specification for Eye Protectors – First Revision
29	IS: 6922	Criteria for safety and design of structures subject to underground blasts
30	IS: 7155	Code of recommended practices for conveyor safety
31	IS: 7205	Safety Code for Erection on Structural Steel Works
32	IS: 7069	Safety Code for Handling and Storage of Building Materials
33	IS: 7293	Safety Code for Working with Construction Machinery
34	IS: 7323	Guidelines for operation of Reservoirs
35	IS: 7969	Safety Code for handling and storage of building materials
36	IS: 8758	Recommendation for Fire Precautionary Measures in construction of Temporary Structures and Pandals
37	IS: 8989	Safety Code for Erection of Concrete Framed Structures
38	IS: 9706	Code of Practices for construction of Arial ropeways for transportation of material
39	IS: 9759	Guidelines for de-watering during construction
40	IS: 9944	Recommendations on safe working load for natural and manmade fibre rope slings
41	IS: 10667	Guide for selection of industrial safety equipment for protection foot and leg
42	IS: 10291	Safety Code for dress divers in civil engineering works
43	IS: 10386 – Part I	Safety Code for Construction, Operation and Maintenance for River Valley Projects
44	IS: 10386 – Part II	Safety Code for Construction, Operation and Maintenance for

		River Valley Projects
45	IS: 11057	Code of Practice for Industrial Safety Nets
46	IS: 13415	Code of Practice on safety for Protective barriers in and around building
47	IS: 13416	Recommendations for preventive measures against hazards at working places

Statutory Regulations

Latest Statutory Acts and Rules, as given below, may be referred:-

1. The Petroleum Acts 1934 and Petroleum Rules 2002
2. The Factory Act, 1948 (As amended by Factory Amendment Act 1987) and concerned Factory Rules
3. The Water (Prevention and Control of Pollution) Act 1974 & Rules 1975
4. The Environment (Protection) Act 1986
5. The Manufacturing, Storage and Import of Hazardous Rules 1989
6. The Hazardous Wastes Management (Management & Handling) Rules 1989
7. The Indian Electricity Act 1901 and Rules 1956
8. The Indian Explosive Acts, 1884 & The Indian Explosive Rules 1983
9. The Gas Cylinder Rules 1981and the static & Mobile Pressure Vessels (Unfired) Rules 1981
10. The Indian Boiler Act 1923 and Regulations 1950
11. The Public Liability Act 1991 as amended in 1992
12. The Motor Vehicle act 1988 and Central Motor Vehicle rules 1989
13. Building & Other Construction workers (Regulation of Employment & Condition of Service) Act 1996

In addition to above, various other statutory acts like EPF, ESIS, Minimum wage act and other local statutory requirements shall also be complied with.

ANNEXURE II

CHECK LIST FOR SAFETY INSPECTION / AUDIT

Job _____ Location _____ Date of Audit_____Frequency _____

Inspected by _____ Contractor (s) _____

Sl.no.	ITEM	YES	NO	NA	REMARKS / ACTION
1.0	**PERSONNEL PROTECTIVE EQUIPMENT (PPE):** Are following PPEs being used as per the job requirements?				
1.1	Safety Helmets				
1.2	Safety Shoes				
1.3	Gum Boots				
1.4	Safety Belts with life line				
1.5	Gloves				
1.6	Ear Plug				
1.7	Goggles				
1.8	Shield Glass				
1.9	Face Protection				
1.10	Breathing Apparatus				
1.11	Canister Mask				
1.12	Hand wash / Eye wash/ Respirating filter / cloth				
1.13	Boiler Suit				
1.14	Others				
2.0	**HOUSE KEEPING**				
2.1	Whether Waste Bins are provided / used				
2.2	Are Passageways / Walkways clear?				
2.3	Is General neatness O.K.?				
2.4	Is the Ground free from oil, grease etc. and is not found to be slippery?				
2.5	Others				

3.0	**EXCAVATION**				
3.1	Whether soil stability is checked?				
3.2	Whether proper shoring for the excavation is provided to prevent cave-in for side of slope >45 Degree?				
3.3	Whether proper precautions have been taken if the excavation is adjoining to heavy structure like building, street and roadways?				
3.4	While excavating whether proper slope usually 45^0 & suitable benches of 0.5 m width at each 1.5 m depth are provided?				
3.5	Whether barricading of 1m height with glowing caution board is provided for excavation beyond 1.5m depth?				
3.6	Whether excavating earth is placed beyond 1m of the edge of the trench?				
3.7	Whether heavy vehicle movement is restricted to come too close to the excavating area?				
3.8	Whether necessary precaution is taken for underground pipes, sewers, cables by contractors?				
3.9	Whether excavation hot work permit is taken?				
3.10	Whether extra precaution is taken for bailing out water properly while excavating?				
3.11	During rains whether the excavation is done with extra precaution to prevent caving in?				
3.12	Whether two separate entry/ exit points with necessary ladders / steps, as per requirement, have been provided?				
3.13	Whether one person is available at all the time to communicate any hazards noticed with workers working in deep trenches or excavation?				
3.14	Whether necessary precautions like				

	regular gas testing are being taken in areas having hydrocarbons and LPG so that no gas accumulation takes place in the trenches.				
3.15	Whether IS: 4081-1986 & Indian Explosive act & rules for storage, handling & carrying of explosive material and execution of blasting operation is followed?				
3.16	Whether in case of mechanised excavation, caution board is provided for do's and don'ts like 'Nobody to enter' within one meter of the extreme reach?				
3.17	Whether the following are inspected during excavation work :- a) Boulder formation encountered b) Collapsing / development of cracks of sides c) Marked damage to support d) Unexpected fall of ground e) Inspection of site after each blast.				
3.18	Others				
4.0	**PERMITS**				
4.1	Whether valid work permit is issued to start any work?				
4.2	Whether all conditions of the permit are fulfilled before starting the job?				
4.3	As noted in the permit, whether compliance of all the recommendations are ensured?				
4.4	Whether permits are available at work site all the times?				
4.5	Whether hot work permit registered in fire station?				
4.6	Whether permits are being closed after the completion of job?				
4.7	Others				
5.0	**SAFETY IN CUTTING / WELDING/GRINDING**				
5.1	Whether LPG / Oxygen / Acetylene/ Gas				

	cylinders are kept outside only while working in confined space?				
5.2	Are Acetylene /LPG cylinders kept in upright position and secured at designated places under shed – wet gunny bags wrapped around it if the same is under sun at designated place?				
5.3	Check cylinder and cylinder valves for any kind of damage?				
5.4	Whether protective valves are kept on cylinder while not in use?				
5.5	Whether proper means and method for transportation of cylinders to avoid dropping and rolling are being adopted / followed?				
5.6	Whether gas cylinders, regulators are kept away/free from oil and grease?				
5.7	Whether all hoses were found to be free of any damage or crack?				
5.8	Whether oxygen and acetylene cylinders are stored separately?				
5.9	Whether color coding is being used for easy identification of different type of cylinders and hoses?				
5.10	Whether cylinder keys are available near the cylinder?				
5.11	Whether gas torches with NRV with flash back arrestor of approved make are only being used?				
5.12	Whether pressure gauges are in working condition and checked from time to time?				
5.13	Whether welding shields are used while welding?				
5.14	Whether proper earthing for welding machines are provided?				
5.15	Whether power is taken from approved sources (welding receptacles)?				
5.16	Whether welding receptacles are properly grounded?				

5.17	Whether welding cables are maintained in good condition and without any joints/ cuts?				
5.18	Whether to avoid short circuit, welding machines are protected against rain?				
5.19	Whether earth connectors are securely connected to the job and not to the adjoining pipeline or structure?				
5.20	Whether flame arrestor of DG set is of approved make and quality?				
5.21	Others				
6.0	**SAND / SHOT BLASTING**				
6.1	Whether sand blasting is used only after getting approval from competent authority?				
6.2	Whether air compressor used for sand / shot blasting are positioned away from work place?				
6.3	Whether exhaust of the prime mover is directed away from the work place?				
6.4	Whether in case of motor driven compressor, the body of the motor as well as the compressor is properly earthed?				
6.5	Whether line operator of sand/shot blasting wear suitable PPEs including mask?				
6.6	Whether adequate measures are adopted to confine dust/spray particles?				
6.7	Whether adequate measures are taken for proper ventilation while the work is done in confined space?				
6.8	Others				
7.0	**SAFETY WHILE WORKING AT HEIGHTS / SCAFFOLDING / LADDERS**				
7.1	Whether work permit is obtained to take up work at height above 3 mts?				
7.2	Whether steel pipes scaffoldings are used in unit/off site areas?				

7.3	Whether provision for suitable platform with all scaffoldings are made? Whether its construction is as per specification with toe board and railing?				
7.4	Whether the area below working at height is cordoned?				
7.5	Whether suitable platform is provided?				
7.6	Whether ISI approved quality and good condition safety belts are used while working at heights?				
7.7	Whether life line of safety belt is Anchored to an independent secured support capable of withstanding load of a falling person?				
7.8	Whether the area around the scaffold is cordoned off to prohibit the entry of unauthorized person?				
7.9	Whether ropes used are of good condition and adequate strength free of defects?				
7.10	Whether ladder is placed at secured and leveled surface?				
7.11	Whether it is extended 1.5 Mts. Above the landing point?				
7.12	Whether ladder used are of adequate length and tying short ladder is avoided?				
7.13	Whether metallic ladders are placed away from electrical system?				
7.14	Whether tools or materials are removed after completion of the day's job at heights?				
7.15	Whether a valid permit is obtained before taking up work on asbestos or fragile roof?				
7.16	Whether sufficient precaution is taken while working on fragile roof?				
7.17	Whether provision is made to arrange duck ladder, crawling board for working at fragile roof?				
7.18	Whether scaffolding has been erected on rigid / firm / levelled surfaces only?				

7.19	Whether scaffold has been inspected by competent person prior to being put in use?				
7.20	Whether the scaffolding has been designed for the load to be borne?				
7.21	Whether the erection and dismantling of the scaffolding is being done only by trained persons and under supervision?				
7.22	Whether safety net with proper working arrangement and life line has been provided?				
7.23	Others				
8.0	**SAFETY IN CONFINED SPACE**				
8.1	Whether a permit is obtained to enter a confined space?				
8.2	Whether gas test for hydrocarbon, toxic gas, oxygen level is obtained before entering any confined space?				
8.3	Whether adequate oxygen level is ensured in confined space before entering? If not, whether all precaution like using of Breathing Apparatus set is ensured?				
8.4	Whether, in case of chance of ingress of hydrocarbon gases / toxic gases, Personnel Monitoring System (PMS) is used or not?				
8.5	Whether only in presence of a supervisor, worker enters in confined space?				
8.6	Whether provision of sufficient means of entry and exit is available?				
8.7	Whether provision of ventilation to remove welding fumes, dust, exhaust gases are made?				
8.8	Whether provision of 24V (Hand lamps with cage as per OISD-STD-155) light for working inside space is made?				

8.9	Is it strictly ensured that a stand-by trained person is standing outside before a person enters a confined space and communication is being maintained all the time with workers working inside?				
8.10	Whether life belt with one end under control of stand-by person outside is kept while working in confined space?				
8.11	Whether Personnel protective Equipment are in good condition as specified in the permit?				
8.12	Whether absence of Hydrogen Sulfide, CO or other toxic gas is ensured before entering into a confined space? If yes, whether proper required PPE like BA, Gas Mask are used.				
8.13	Whether boxing up is being done only as per the approved procedures and by competent persons?				
8.14	Whether all the safety precautions listed in OISD-GDN-192 are taken while working in sewers, OWS etc.?				
8.15	Whether proper house keeping is being maintained inside the confined space?				
8.16	Whether training has been provided to workers working in the confined space and the workers only of sound health are being asked to work in the confined space?				
8.17	Others				
9.0	**SAFETY IN MATERIAL HANDLING**				
9.1	Whether all lifting tools, tackles, machines, chains, ropes etc. are of sound construction, made of sound material and maintained in good condition?				
9.2	Whether safe working load, date of testing visibly marked/painted on the equipment?				
9.3	Whether lifting tools, tackles are of adequate strength for the load to be handled?				
9.4	Whether all parts including the working gears fixed or movable of every lifting machine, chain, rope, tackles specify the				

	following condition: a) Thoroughly examined by competent person at least once a year or such interval as required by statutory authority. b) Document of such examination are maintained and produced to owner supervisor before use of particular equipment?				
9.5	Whether chain blocks and cables are inspected before each use to assure their sound condition?				
9.6	Whether hoist and lift if used are: a) Properly maintained and thoroughly examined by competent authority at least once in every year. b) A register to be maintained to record particulars of such examination in prescribed forms and shall be produced to the owner supervisor before use.				
9.7	Whether area below the movement of boom of crane is cleared to avoid injury from falling objects?				
9.8	Whether it is ensured that crew of truck leave the truck in crane handling area before starting loading / unloading, if not involved in rigging operation?				
9.9	Whether transporting material from one place to another is done by suitable means?				
9.10	Whether carrier with sufficient capacity without projecting parts is used for transporting materials?				
9.11	Whether riggers engaged are well trained and conversant with signaling procedures including night signalling if required?				
9.12	Whether permission of authorized person is obtained before working on or near an overhead crane?				
9.13	Whether trained riggers are available all the time along with crane?				

9.14	Whether barricading has been done to ensure no unauthorised person enters in the working area of the crane?				
9.15	Whether lifting plan has been prepared and approved before start of the work?				
9.16	Whether route of crane movement has been planned before the crane moves out of the garage?				
9.17	Whether it has been ensured that no electrical cable come within 3 metres or safe distance from the boom of the crane?				
9.18	Whether boom is being kept in the horizontal position or locked while idling?				
9.19	Whether material is being stacked / destacked in trucks with the help of wedges to ensure no slippage while loading / unloading takes place?				
9.20	Whether the forklift / crane is being operated only by trained person?				
9.21	Others				
10.0	**ELECTRICAL SAFETY**				
10.1	Has the Electrical Line Clearance procedure been followed involving electrical and other concerned Dept. and filling of formats?				
10.2	Have Danger Signs with Voltage rating/ Men at work signboards been displayed at both Sub Station as well as the work site?				
10.3	Has the contractor worker understood the electrical circuit on which he is going to work with probable electrical hazards and mitigation measures to be adopted?				
10.4	Whether contractor has engaged electrician (s) having valid electrical licence in line with provisions in Indian Electricity Rules?				

10.5	Have all checks prior to switching operation been carried out and authorisation of owner/ user section obtained subsequently?				
10.6	Have all earthing links on electrical conductors removed before charging the line/ apparatus?				
10.7	Have PPE as prescribed under Indian Electricity Rules been in place, kept healthy and used?				
10.8	Are earthing and bonding arrangement of non-current carrying metallic parts in line with provisions of Indian Electricity Rules – 1956 amended time to time as IS: 3043?				
10.9	Have electrical part of OISD-GDN-192 and Clause No. 9.0 for Temporary installations in OISD-173 been understood and followed wherever applicable?				
10.10	Are flexible wires having voltage of 240 volts above earth potential taken through PVC conduits?				
10.11	Whether portable hand lamps with a voltage rating of not more than 24 volts used with flameproof enclosures in confined spaces within columns, vessels etc?				
10.12	Have the Switches, MCBs, fuses etc. been inspected for proper ratings?				
10.13	Has Earth Leakage Circuit Breaker (ELCB) been used on the incoming side to protect against leakage of current? Is the device tested every time the work is started?				
10.14	Whether all portable appliances are provided with insulated Three pin Plugs and socket arrangement?				
10.15	Whether industrial type extension boards and plug sockets are used?				
10.16	Has the electrical equipment brought to site by contractor been inspected by owner's supervisor/ safety officer for damage/cuts/abrasion etc? Is record of				

	Insulation Resistance, wherever required , being kept?				
10.17	Have standard practices for termination of conductors/ cables been followed (e.g. use of proper lugs, crimping tool, cable glands etc)? Is cable armour in continuity from feeding point to load?				
10.18	Are the Contractor supervisor and workmen well acquainted with first aid for electrical shock?				
10.19	Are the wires/ cables identifiable along their route towards the load by using colour coding and/or markers?				
10.20	Others				
11.0	**ROAD WORK**				
11.1	Whether site is barricaded and provided with warning signs including night warning lamps/ self glowing markers at appropriate location for diversion of traffic?				
11.2	Whether mixing aggregates with bitumen is done with the help of batch mixing plants? If no, whether adequate precautions have been taken?				
11.3	Whether road rollers, bitumen sprayers, pavement finishers are driven by experienced drivers with valid driving licenses?				
11.4	Whether the worker handling hot bitumen sprayers or spreading bitumen aggregate mix or mixing bitumen with aggregate are provided with PVC hand gloves rubber shoes with pegging upto knee joints?				
11.5	Others				
12.0	**FORM WORK, REINFORCEMENT**				
12.1	Whether form work, shuttering, shoring etc. are adequately designed and provided to erect the structure and to support the expected load?				

12.2	Whether staging (support) for shuttering is designed for loads like worker movement, impact load and other incidental loads during construction?				
12.3	Whether workers use PPEs at work site?				
12.4	Whether all safety procedures are adopted while cutting rod?				
12.5	Whether proper staging and bundling is provided for supplying rods at height?				
12.6	Whether sufficient cross bracings are provided for high staging works at vulnerable points?				
12.7	Others				
13.0	**CONCRETING**				
13.1	Whether the concreting area is barricaded?				
13.2	Whether vibrator hoses, pumping concrete accessories are in healthy condition and mechanically strong?				
13.3	Whether it is ensured that no pipe line in concrete pumping system is attached to any temporary strut such as scaffolds etc.?				
13.4	Whether it is checked that safety guards around moving parts are provided in concrete mixer/ machines?				
13.5	Whether earthing of electrical mixers, vibrator etc. are checked?				
13.6	Whether entry of unauthorised person in the concreting area is restricted?				
13.7	Whether adequate lighting arrangement is made in the concreting area if working during night?				
13.8	Whether PPEs like gum boots, gloves and dust masks etc. are being used?				
13.9	For overhead or underground work, whether form work and shuttering have been checked so that the same do not collapse during concreting?				

13.10	Others				
14.0	**DEMOLISHING (DEMOLISHING BY BLAST NOT CONSIDERED)**				
14.1	Has the stability of structure been examined by competent person and found OK?				
14.2	Are non-sparking tools being used, if required?				
14.3	Is intermittent clearing operation being done to keep the area reasonably tidy and clean?				
14.4	Whether effective barricading has been provided?				
14.5	Whether Electrical and other facilities like water, oil, gas pipelines have been isolated/protected?				
14.6	Whether the plan of demolition (including sequence of activities) has been prepared and approved prior to start of the work?				
14.7	Others				
15.0	**RADIOGRAPHY**				
15.1	Are safety precautions for handling of source as per guidelines of BARC being followed?				
15.2	Is the potency of the source being used within acceptable limits as per the BARC regulations?				
15.3	Is the area being cordoned with proper signs during radiography?				
15.4	Does proper place exist as per BARC regulations for storage of source / Personnel safety equipment?				
15.5	Does the radiographer has valid certificate of radiography from competent authority (BARC)?				
15.6	Is radiographer using Exposure Meter / Dosi Meter?				
15.7	Whether minimum occupancy of the				

	premises / workplace is being ensured while radiography is in progress?				
15.8	Is permit system being followed?				
15.9	Others				
16.0	**ADDITIONAL SAFETY PRECAUTION FOR UNITS WITH HYDROCARBONS**				
16.1	Are jobs being carried out with a valid work permit only as per OISD-STD-105 "Work Permit System".				
16.2	Is smoking prohibited in all places containing combustible or flammable materials and "No Smoking" notices prominently displayed.				
16.3	Are only approved type electrical installations and equipment, including portable lamps, being used?				
16.4	Are oily rags, waste, wooden materials and clothes or other substances liable to spontaneous ignition being removed?				
16.5	Are the combustible materials properly shielded in case same cannot be removed from the area?				
16.6	Has welding screens (like metal/asbestos/ water curtain) been put up to protect other equipment / facilities/ OWS/ drains in adjoining areas against flying sparks, as may be required?				
16.7	Is Gas-testing being done with the means of a calibrated Gas detection Meter prior to start of Hot work and being done subsequently at regular intervals as per the requirement?				
16.8	Are regular inspections being done of places where there are fire risks like in the vicinity of heating appliances, electrical installations and conductors, stores of flammable and combustible materials, welding and cutting operations?				
16.9	Are fire-extinguishing equipment being placed at strategic locations and are kept well maintained and inspected at suitable intervals by a competent person.				
16.10	Are access to fire-extinguishing equipment such as hydrants, portable				

	extinguishers and connections for hoses kept clear at all times?				
16.11	Are all supervisors and a sufficient number of workers trained in the use of fire-extinguishing equipment?				
16.12	Are audio means, to give warning in case of fire provided, audible in all parts of the site where persons are liable to work?				
16.13	Is there an effective evacuation plan in place so that all persons are evacuated speedily without panic?				
16.14	Others				
17.0	**EMERGENCY PROCEDURES**				
17.1	Is signaling / siren system effective?				
17.2	Is arrangement for rescuing affected person adequate?				
17.3	Are signs showing emergency exit route installed?				
17.4	Is emergency exit route clear of obstacles?				
17.5	Is communication system adequate?				
17.6	Whether emergency vehicle with driver has been provided to meet any emergency situation?				
17.7	Does any tie-up with hospitals or local doctors exist?				
17.8	Has the assembly point for workers in case of emergency been identified and earmarked?				
17.9	Has training been provided to a few workers for First Aid?				
17.10	Others				
18.0	**WELFARE FACILITIES**				
18.1	Is hygienic conditions prevailing at labour camps?				
18.2	Are First Aid facilities available?				

18.3	Does proper sanitation exist at site office and labour camps?				
18.4	Does any arrangement of medical facilities like tie ups with nearby hospital exist?				
18.5	Is proper drinking water facility available for workmen & staff?				
18.6	Are crèches provided for children (if applicable)?				
18.7	Is any proper place/canteen/restroom provided for eating food and taking rest?				
18.8	Is any place earmarked for storing / keeping clothing?				
18.9	Is Adequate washing facility available?				
18.10	Does proper ventilation at working place exist?				
18.11	Others				
19.0	**GENERAL**				
19.1	Are illumination levels at workplace and passages adequate?				
19.2	Is communication system adequate?				
19.3	Are display and caution boards provided at strategic locations?				
19.4	Are road barriers being used for blocking any roads/passage?				
19.5	Has the structure been adequately secured against storm/high winds during construction/ erection?				
19.6	Are the equipment properly earthed?				
19.7	Are vehicles being checked like brakes, oil, lights etc. on regular basis?				
19.8	Is compressed air being used only for its intended purpose and not for any other purpose?				
19.9	Are only proper clothes and not loose clothes being used while working around				

	machinery?				
19.10	Are nails or other sharp objects being removed or bent?				
19.11	Are machine guards over moving parts of machinery such as coupling, pulley, wheel etc. installed?				
19.12	Whether after maintenance of machinery the guards are securely fitted before putting into operation?				
19.13	Are working platforms / gangways provided with hand rails & toe guards?				
19.14	Are swing platforms provided with chains & secured adequately when not in use?				
19.15	Are the approaches to work sites being maintained & kept clear of obstacles?				
19.16	Whether engines of equipment entering into the operating area have exhaust and muffler system with approved spark arrestor?				
19.17	Whether vehicles/engine driven equipment, electrical equipment and tools used are certified?				
19.18	Whether contractors inform his workers about hazards and safe procedures?				
19.19	Whether sufficient care is taken so that spark do not go outside working enclosure & falls below?				
19.20	Whether contractor's qualified / trained supervisor is present?				
19.21	Whether all exhausts of engines are provided with approved type of flame arrestors and exhaust is not facing toward the place where the workers are working?				
19.22	Others				

Signature of the Auditor

CONDITIONS FOR ISSUE AND RECONCILIATION OF MATERIALS

[ANNEXURE - XI TO SPECIAL CONDITIONS OF CONTRACT]

सामग्री इश्यू और रिकन्सिलेशन

हेतु शर्तें

CONDITIONS

FOR ISSUE AND

RECONCILIATION OF MATERIALS

Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
					Approved by	
0	21/05/2008	Doc. No. 6-10-0001 Rev 0 has been revised and issued as Standard	AS	GK	SCB	VC

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Abbreviations:

MS	:	Mild Steel
OFC	:	Optical Fibre Cable
OTDR	:	Optical Time Domain Report

Construction Standards Committee

Convenor :	Sh. S.C. Barman, HOD (Construction)
Members :	Sh. A.K. Mittal, DGM (Projects) Sh. M.P. Jain, AGM (Projects) Sh. Rakesh Nanda, AGM (Piping) Sh. Amarjeet Singh, Sr. Engineer (Constn)
Invitees :	Sh. V.K. Budhiraja, DGM (C&P) Sh. G.K. Iyer, Sr. Manager (Constn)

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1.0 CONDITIONS FOR ISSUE OF MATERIALS

Whenever any material is issued by Owner, following conditions for issue of material in addition to other conditions specified in the contract shall be applicable:

1.1 Necessary indents shall be raised by the Contractor as per procedure laid down by the Engineer-in-Charge from time to time, when the materials are required for incorporation in permanent works.

1.2 Materials shall be issued only for permanent works and not for temporary works, enabling works etc. unless specifically approved by the Engineer-in-Charge.

1.3 The Contractor shall bear all other cost including lifting, carting from issue points to work site/Contractor's store, custody and handling etc. and return of surplus/serviceable scrap materials to Owner's storage points to be designated by the Engineer-in-Charge. No separate payment for such expenditure shall be made.

1.4 No material shall be allowed to be taken outside the plant without a gate pass.

1.5 The Contractor shall be responsible for proper storage, preservation and watch & ward of the materials.

2.0 RETURN OF UNUSED MATERIAL/ SCRAP

2.1 All unused/scrap materials shall be the property of the Owner and shall be returned in good and acceptable condition category wise by the Contractor at his own cost to Owner's Store(s).

2.2 No credit shall be given to the Contractor for return of scrap. The Contractor should quote the rates accordingly. Contractor shall make his own arrangements for weighing the cut offs to be returned to Owner's stores.

2.3 In case the Contractor fails to return unused materials/ accountable scrap, then recovery for such quantity of materials, not returned by the Contractor shall be affected at following penal rates from the Contractor's bills or from any other dues of the Contractor to the Owner:

S. No.	Material		Penal Rates
1.	(a)	Penal rate for non return of accountable scrap	Issue Rate + 25% or Landed Rate + 25% (in case issue rate are not indicated in the contract)
	(b)	Penal rate for return of serviceable materials in excess of permitted % allowances	
	(c)	Penal rate for issuance of unplanned OFC jointing kits	

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2.	(a)	Penal rates for non return of Unused material and or penal rate for generating scrap in excess of permitted % allowances	Twice the Issue Rates or Twice the Landed Rates (in case Issue Rates are not indicated in the Contract)
	(b)	Penal rate for using excess amount of materials like cement than permitted % allowances	

NOTE : 1) Landed Rate shall be arrived from the latest Purchase Order of respective material received at site by Owner/EIL.

2) In case more stringent penal rates have been indicated elsewhere in the Contract (based on Project requirement), the same shall supersede the above rates.

3.0 CEMENT

3.1 Cement as received from cement Manufacturer/Stockists shall be issued to the Contractor. The theoretical weight of cement in each bag for issue purpose shall be considered as 50 Kg or 20 bags per MT. However, cement bags weighing upto 4% less shall be accepted by the Contractors and charged for as full bag.

3.2 The Contractor is required to submit the design mix for different grades of concrete, keeping in view the requirements stipulated in IS:456 and IS 10262, specifically regarding durability, slump and water cement ratio and specific gravity of materials brought to site as analyzed in the laboratories. The design shall be based upon absolute volume method and theoretical consumption of cement shall be worked out on this basis. For other than concrete items, the coefficients for consumption of cement shall be adopted as per CPWD practice.

3.3 The permissible variation between Cement actually used on the job and theoretical consumption worked out on the basis stipulated in above para 3.2 and as determined by Engineer-in-Charge shall be 3% (Three percent only).

If the actual consumption is more than 103% of the theoretical consumption, then recovery at the penal rates for the quantity of cement beyond the limit of 103% of theoretical consumption shall be affected as per clause 2.3 above.

3.4 Unused quantity of cement shall be returned by the Contractor to the Owner's stores in good condition only.

3.5 The Contractor shall maintain a good store for storing cement issued to him. The flooring of the storage house, the clearances of cement bags from the side walls/ floor & stack height etc. shall be as instructed by the Engineer-in-Charge.

3.6 The contractor shall maintain a Cement Register in prescribed format and update the entries on daily basis.

3.7 The cement store shall be offered for inspection and verification by the Engineer-in-Charge or his authorized representative at any time when the Engineer-in-Charge feels the need to do so.

3.8 Empty cement bags shall be the property of the Contractor and shall have to be disposed off by him.

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4.0 REINFORCEMENT BARS /STRUCTURAL STEEL/PLATES

4.1 The scrap allowance for the reinforcement bars/structural steel including steel plate issued by the Owner, shall be total 3% (2.5% accountable and 0.5% unaccountable) of the actual consumption as incorporated in the works.

4.2 All serviceable reinforcement bars/structural steel/steel plates shall be issued in available length/shapes/sizes and no claims for extra payment on account of issue of non-standard lengths/shapes/sizes and bending etc. shall be entertained. Reinforcement bars and structural steel shall be issued on weighment basis as per normal warehousing practice. In exceptional circumstances, the reinforcement bars/ structural steel, if issued on linear measurement, the IS coefficients for unit weight shall be considered. For the purpose of billing and accounting, only linear measurements shall be taken and weight shall be calculated as per IS coefficients in three decimals. The difference in unit weight as per IS and actual as issued, if any, shall be to Contractor's account and Contractor is deemed to have considered the same at the time of bidding.

4.3 Reinforcement bars/structural steel/steel plates shall be issued only for those items where Owner's supply has been specifically mentioned in Schedule of Rates/ Scope of Supply. The storage of these items shall be done in such a way so as to avoid rusting/ damage to any kind to the materials.

4.4 All reinforcement bars/structural steel (except M.S. Plates) in length of 2 meters and above shall be considered as serviceable materials provided the material is in good and acceptable condition. Reinforcement bars/structural steel section (except M.S. Plates) in lengths less than 2M shall be treated as scrap.

The contractor shall strive to avoid generation of cut pieces of length 2m and above, as far as practicable, by effectively planning & executing the construction works.

4.5 For the purpose of accounting of the plates, all plates measuring not less than 1 Sq.m in area and having any dimensions not less than 200mm when returned to Owner's store, shall be considered as serviceable material. All other pieces shall be treated as wastage/scrap. The Contractor shall prepare a plate cutting diagram in such a way that the minimum scrap is generated. Also the cut plates should be used at proper places to reduce the scrap.

4.6 The serviceable cut pieces as mentioned in 4.4 & 4.5 above shall be considered as unused material for reconciliation purpose.

4.7 Material appropriation shall be done and wherever applicable, the recovery at penal rates as per clause 2.3 above shall be affected from the contractor.

5.0 PIPING MATERIALS

5.1 All serviceable pipes shall be issued in available lengths/shapes and no claims for extra payments on account of issue of non-standard length & shape shall be entertained. Pipes shall be issued on linear measurement basis. All valves, flanges, fittings etc. shall be issued on number(s) basis. Contractor shall store the materials in such a way so as to avoid mixing of different types of material and shall maintain complete identification and traceability at all times.

5.2 The scrap allowance for pipes issued by the Owner shall be 3% (2.5% accountable + 0.5% unaccountable) of the actual consumption as incorporated in the works.

5.3 All pipes in length of 2 meters and above shall be considered as serviceable material provided the material is in good and acceptable condition and has clear identification and traceability

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(Manufacturer's name, heat number/batch number and test certificates). Pipes in lengths less than 2M shall be treated as scrap.

The contractor shall strive to avoid generation of cut pieces of length 2m and above, as far as practicable, by effectively planning & executing the construction works.

5.4 All unused/scrap pipes, valves, flanges, forged fittings like elbows, reducers tees shall be returned by the Contractor category wise duly cleaned, greased and spec. marked at his own cost to Owner's stores.

5.5 Material appropriation shall be done and wherever applicable, the recovery at penal rates as per clause 2.3 above shall be affected from the contractor.

6.0 EQUIPMENTS

Various equipment/materials intended for the installation shall be received by Owner in unpacked, skid mounted, crated, packed or loose condition and shall be stored in the warehouses and open yards. In general, materials shall be issued to the Contractor in 'as received' condition. It shall be the Contractor's responsibility to draw, load and transport all materials from Owner's designated places of issue to the point of installation and return all packing materials like steel frames, wooden boxes/scrap etc. to Owner's stores.

All materials supplied by the Owner shall be duly protected by the Contractor at his own cost with appropriate preservative like primer, lacquer coating, grease etc. as required.

7.0 CABLES

Appropriation of cables shall be done as follows:

7.1 All the surplus and serviceable cables out of the cables quantity(ies) issued by the Owner to the Contractor shall be returned by the Contractor to the Owner's store in good condition and as directed by the Engineer-in-Charge.

7.2 The Contractor shall be allowed a cutting/wastage allowance (accountable scrap) of 1.5% for power cables and 3% for the control cables. This cutting/wastage allowance shall be computed on the length of cables actually laid, measured and accepted.

7.3 All cables being returned to store should carry Aluminium sheet tags indicating the size & type of cable. Cables of less than 15 meters length shall be termed as scrap. Cables of lengths 15M and above shall be termed as serviceable material & shall be returned size wise and category wise to the Owner's store in wooden drums. Cables of serviceable length being returned to stores in drum(s) shall be accepted only after Megger value continuity test and physical measurement is carried out by the Contractor to the satisfaction of Engineer-in-Charge. Empty cable drums and major packing material (as decided by Engineer-in-charge) shall be Owner's property and shall be returned to Owner's Store/designated place without any additional cost.

The contractor shall strive to avoid generation of cut pieces of length 15m and above, as far as practicable, by effectively planning & executing the construction works.

7.4 While carrying out material appropriation with the Contractor, the above points shall be taken into account. All serviceable materials returned by the Contractor (size wise & category wise) shall be deducted from the quantity(ies) issued to the Contractor for the respective sizes. Scrap generated for power cable and control cable shall also be returned to Owner's store on Lot basis. Wherever applicable, the recovery at penal rates as per clause 2.3 above shall be affected from the contractor.

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8.0 LINE PIPES

8.1 All bare/ coated line pipes as per Line Pipe specifications shall be issued on linear measurement basis. The serviceable line pipes shall be issued in available lengths and shapes and no claim for extra payment on account of issue of non-standard length and shape shall be entertained. Contractor shall store and maintain the line pipes in proper manner to avoid mixing of different classes of pipes. Contractor shall maintain complete identification and traceability at all times. All cut pieces when returned to Owner's storage points after beveling, shall be considered as serviceable material provided:

a) Corrosion Protection Coating is intact.

b) Pipe pieces have pipe specifications, manufacturer's logo/name and heat number duly authenticated with hard stamp of the authorized inspector as per approved procedure.

All cut pieces of pipes measuring less than 2 M shall be treated as wastage/scrap.

The contractor shall strive to avoid generation of cut pieces of length 2m and above, as far as practicable, by effectively planning & executing the construction works.

8.2 For the purpose of accounting of bare/ coated line pipes, following allowances shall be permitted:

a)	Unaccountable wastage	
	- upto 100 Km	0.1%
	- 101 to 500 Km	0.07%
	- beyond 500 Km	0.05%
b)	Scrap (All cut pieces of pipes measuring less than 2 Meter)	0.25%
c)	Serviceable materials (All cut pieces of pipe measuring 2 Meter and above)	0.5%

The percentage allowance shall be accounted on the basis of pipe book chainage for main pipeline.

8.3 Material appropriation shall be done and wherever applicable, the recovery at penal rates as per clause 2.3 above shall be affected from the contractor.

9.0 OPTICAL FIBRE CABLE

9.1 For the purpose of accounting of optical fibre cable, all cut pieces measuring in length of 40 m and above when returned to Owner's storage points shall be treated as serviceable materials. All cut pieces of cable measuring less than 40 M shall be treated as scrap.

For the purpose of accounting of OFC (Optical Fibre Cable) following allowances shall be permitted:

a)	Unaccountable wastage	0.5%
b)	Scrap (All cut pieces of cables measuring less than 40 M)	0.25%
c)	Serviceable material (measuring 40m to 750m)	0.25%

The percentage allowance shall be accounted on the basis of pipe book chainage for main pipeline.

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Cables returned in original drum (measuring 750m and above) with Optical Time Domain Report (OTDR) shall be considered as unused material.

9.2 The contractor shall strive to avoid generation of cut pieces of length 40m and above, as far as practicable, by effectively planning & executing the construction works.

9.3 Material appropriation shall be done and wherever applicable, the recovery at penal rates as per clause 2.3 above shall be affected from the contractor.

10.0 OFC JOINTING KITS

The Contractor shall make a schedule for use of Cable jointing kits and get the same approved from Engineer-in-charge. The quantity mentioned in this schedule shall be termed as 'planned' usage quantity which shall be issued to the Contractor. However, any jointing based on site requirements as decided by Engineer-in-charge shall be included in planned quantity.

Any unplanned jointing required to be carried out by the Contractor due to reasons not attributable to Owner/EIL shall be issued from spare quantity, if available with Owner. Such unplanned OFC Jointing Kits shall be charged from the contractor at penal rates as per clause 2.3 above.

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APPROVAL OF CONSTRUCTION SUB-CONTRACTOR

[ANNEXURE - XII TO SPECIAL CONDITIONS OF CONTRACT]

1.0 ANNEXURE-XII TO SCC

(APPROVAL OF CONSTRUCTION SUB-CONTRACTOR)

1) NAME OF MAIN CONTRACTOR:_____

2) NAME OF WORK, LOCATION:_____

3) NAME OF PROPOSED SUB-CONTRACTOR :_____

4) SCOPE OF WORK PROPOSED TO BE SUB-CONTRACTED (BRIEF):_____

5) ESTIMATED VALUE OF THE PROPOSED WORK TO BE SUB-CONTRACTED (INR):_____

6) QUALIFYING CRITERIA FOR SUB-CONTRACTOR:
   i) Similar Work experience :
   Completed one Contract of 40% of estimated value of proposed work to be sub-contracted, in preceding seven years

   ii) Average Annual Turnover
   Not less than 50% of estimated value of
   Proposed work to be sub-contracted, in any one of the preceding 3 years

7) EXPERIENCE AND FINANCIAL DETAILS OF PROPOSED SUB-CONTRACTOR:

i)	Contract Value of similar work Executed (as evidenced by work Order & Completion Certificate)	:
ii)	Maximum Annual Turnover during last 3(three) years (as evidenced by Balance Sheets)	:
iii)	Concurrent Commitments (including the works proposed to be sub-Contracted)	:

8) CRITERIA FOR QUALIFICATION OF SUB-CONTRACTOR:

i)	Sl.No. 7(i)	$\geq$6 (i)	YES / NO
ii)	Sl.No. 7(ii)	$\geq$ 1.25 x 5	YES / NO
iii)	Sl.No. 7(iii)	$\geq$2 x Sl.No. 7(ii)	YES / NO

9) Based on above information, we M/s _____(Name of Main Contractor) propose M/s. _____(Name of proposed sub-contractor) as our sub-contractor for the above mentioned works. We understand that notwithstanding above approval, we shall remain fully responsible for the performance of the said sub-contractor and any failure of the sub-contractor shall not absolve/relieve us of our responsibility to complete the works as per the terms and conditions of the Contract.

NOTE: Bidders to fill all the details in the above proforma. Further Bidder shall also fill-in The details at Sl.No.5 above based on the estimated value of the proposed work to be subcontracted.

(STAMP & SIGNATURE OF CONTRACTOR)

10) QUALIFICATION STATUS (TO BE STAMPED BY BCPL) :

VENDOR LIST FOR CEMENT & STEEL

[ANNEXURE – XIII TO SPECIAL CONDITIONS OF CONTRACT]

Contract Clause for Structural Steel

1. Structural steel shall be allowed to be procured from manufacturers having valid BIS license. Structural steel shall conform to IS:2062 & IS:808 and will meet the technical specifications of the contract. This shall be subject to establishment of correlation with manufacturer's MTC for conformance to the applicable code.

2. In addition to establishment of traceability with manufacturer's MTC, for structural steel procured from other than reputed manufacturers (SAIL, TISCO, RINL, ESSAR, JINDAL, JSIW steel and ISPAT may be considered as reputed manufacturers), for each category/size of steel procured, one sample from every 50 Tons or part there of shall be drawn and tested.

3. In case of assorted lot, sample shall be drawn from each lot, irrespective of lot size.

Approved manufacturers of cement and the methodology for procurement of cement

1.1 List of Approved Manufacturer of Cement :

Sl No	Name of Company	Product
1.	ACC,	All types of cements having validity of BIS approval on the date of ordering.
2.	Ultra tech cement	All types of cements having validity of BIS approval on the date of ordering.
3.	Vikram Cement	All types of cements having validity of BIS approval on the date of ordering.
4.	Shri Cement	All types of cements having validity of BIS approval on the date of ordering.
5.	Gujarat Ambuja,	All types of cements having validity of BIS approval on the date of ordering.
6.	Jaypee Cement	All types of cements having validity of BIS approval on the date of ordering.
7.	Century Cement	All types of cements having validity of BIS approval on the date of ordering.
8.	JK (Laxmi) cement	All types of cements having validity of BIS approval on the date of ordering.

1.2 CONTRACT CLAUSE FOR PROCURING CEMENT FROM NON LISTED MANUFACTURERS

In case of non availability of cement from the listed Manufacturers as above and forming part of the contract, Engineer In Charge may accord Project specific approval to the Contractor to use Cement procured from other reputed manufacturer of Cement subjected to fulfilling Technical requirements as per clause 1.3.

1.3 TECHNICAL REQUIREMENTS APPLICABLE TO CEMENT

- Availability of valid BIS license.
- Availability of valid ISO Certification from recognized body.
- Test certificates of the products from the reputed laboratories accredited by NABL.
- Infrastructural & testing facilities with methodology of Quality control of products.
- List of products being manufactured in the plant.
- The contractor shall furnish documentary evidence towards non availability of cement from the listed suppliers.
- The cement manufacturing plant must have the Capacity of production not less than 1 MMTPA.

- Cement procured shall meet the provisions of relevant IS codes for respective grade / type of cement and shall have IS mark on them.
- The contractor shall furnish manufacturer's test certificates to the Engineer-in-Charge in respect of all supplies of cement brought by him to site for incorporation in permanent work
- In addition to verification of delivery orders and delivery challans of the cement manufacturer, samples shall be taken and got tested by the Engineer-in-Charge in an approved test house as per the provisions laid down in EIL Specifications/BIS codes. The sample size shall be as under in case of Cement.

Type of cement	**For Consignment below 100 MT**	**For Consignment above 100 MT**
All types	One sample for each 25 MT or part thereof	One sample for each 40 MT or part thereof

The cost for all the tests shall be borne by the contractor. In case the test results indicate that the cement arranged by the contractor does not conform to the specifications, the same shall stand rejected as per discretion of EIC, and shall be removed immediately from the site of work by the contractor at his own expense and without any claim for compensation due to such rejection

Approved manufacturers for TMT Bars and Methodology for obtaining rebate

1.2 List of Approved Manufacturer of TMT bars :

Sl No	Name of Company	Product
9.	SAIL	All types of bars having validity of BIS approval on the date of ordering.
10.	RINL	All types of bars having validity of BIS approval on the date of ordering.
11.	TATA STEEL LTD (TSL)	All types of bars having validity of BIS approval on the date of ordering.
12.	JINDAL STEEL & POWER LIMITED	All types of bars having validity of BIS approval on the date of ordering.
13.	JSW STEEL LIMTED	All types of bars having validity of BIS approval on the date of ordering.

1.2 CONTRACT CLAUSE FOR OBTAINING REBATE ON TMT REINFORCEMENT BARS

In case of non availability of steel from the listed Producers as above and forming part of the contract, Engineer In Charge may accord Project specific approval to the Contractor to use TMT reinforcement bars procured from other reputed producers of TMT bars subjected to fulfilling Technical requirements. However, such approvals shall be considered subject to the contractor offering rebate as per following:

Difference in Base price of TMT reinforcement bars procured from “Primary Manufacturer” (Listed) & “Secondary Manufacturer” (Non Listed) shall be as per Memorandum issued by CPWD (Sample Memorandum attached for reference and available on CPWD website) & shall be considered for obtaining the rebate rate per MT. The Memorandum of CPWD as applicable on the date of receipt of material at site shall be considered for working out the rebate rate. Base price of TMT bars issued by CPWD shall be applicable for all types/grade of reinforcement bars. The sample memorandum of CPWD mentioned above shall be applicable irrespective of the geographical locations.

1.3 TECHNICAL REQUIREMENTS APPLICABLE TO TMT BARS

- Availability of valid BIS license shall be verified from BIS website.
- Availability of valid ISO Certification from recognized body.
- Inspection reports of the products from the reputed third party inspection like DNV,LRS, CEIL, TU, BV, etc.
- Infrastructural and testing facilities with methodology of quality control of products.
- List of products being manufactured in the plant.
- The contractor shall furnish documentary evidence towards non availability of TMT bars from the listed suppliers
- Materials supplied by producers having Integrated steel plants shall have capacity of production of crude steel of 0.5 million tons per annum
- The producers must have valid license from BIS to produce High Strength Deformed (HSD) rebars / TMT bars conforming to IS: 1786. In addition to BIS

license for HSD rebars, the producers must have valid license from any of the firms Tempcore, Thermex, Evcon Turbo & Turbo Quench to produce Thermo-Mechanically Treated (TMT) rebars and shall conform to the specifications laid by these firms for particular grade of TMT rebars.

- Steel material procured shall meet the provisions of IS: 1786 for respective grade of TMT rebars like Fe500, Fe500D, etc. and shall preferably have IS mark on them.
- The contractor shall furnish manufacturer's test certificates to the Engineer-in-Charge in respect of all supplies of rebars brought by him to site for incorporation in permanent work.
- In addition to verification of delivery orders and delivery challans of the steel manufacturer, samples shall be taken and got tested by the Engineer-in-Charge in an approved test house duly witnessed by Reputed third party agency like DNV, LRS, CEIL, TU, BV, etc. as per the provisions laid down in EIL Specifications/BIS codes. The sample size shall be as under in case of TMT bars.

Size of Bar	**For Consignment below 100 MT**	**For Consignment above 100 MT**
Under 10 mm dia bars	One sample for each 25 MT or part thereof	One sample for each 40 MT or part thereof
10mm to 16 mm dia bars	One sample for each 35 MT or part thereof	One sample for each 45 MT or part thereof
Over 16 mm dia bars	One sample for each 45 MT or part thereof	One sample for each 50 MT or part thereof

The cost for all the tests and the test certificates shall be borne by the contractor. In case the test results indicate that the rebars arranged by the contractor does not conform to the specifications, the same shall stand rejected as per discretion of EIC, and shall be removed immediately from the site of work by the contractor at his own expense and without any claim for compensation due to such rejection